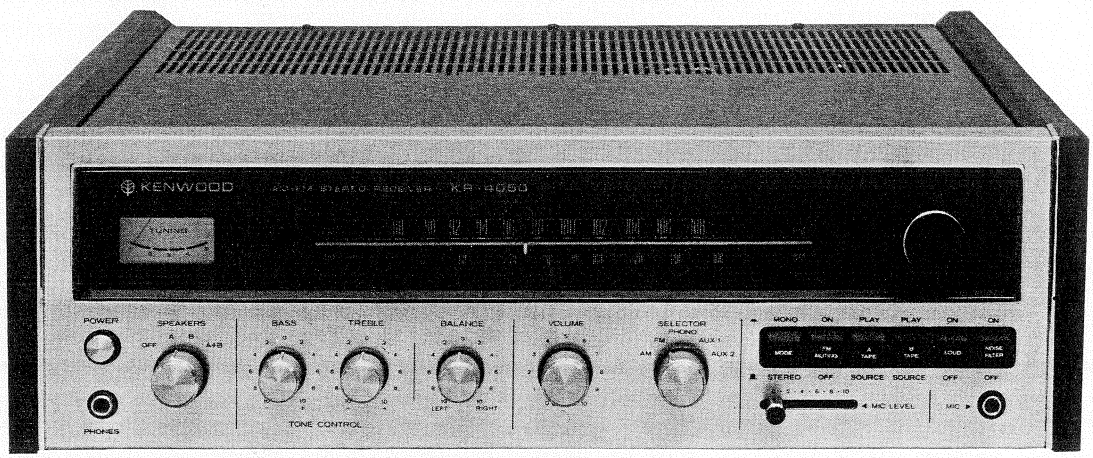
KENWOOD

HI/FI STEREO COMPONENTS

SERVICE MANUAL

KR-4050



STEREO RECEIVER

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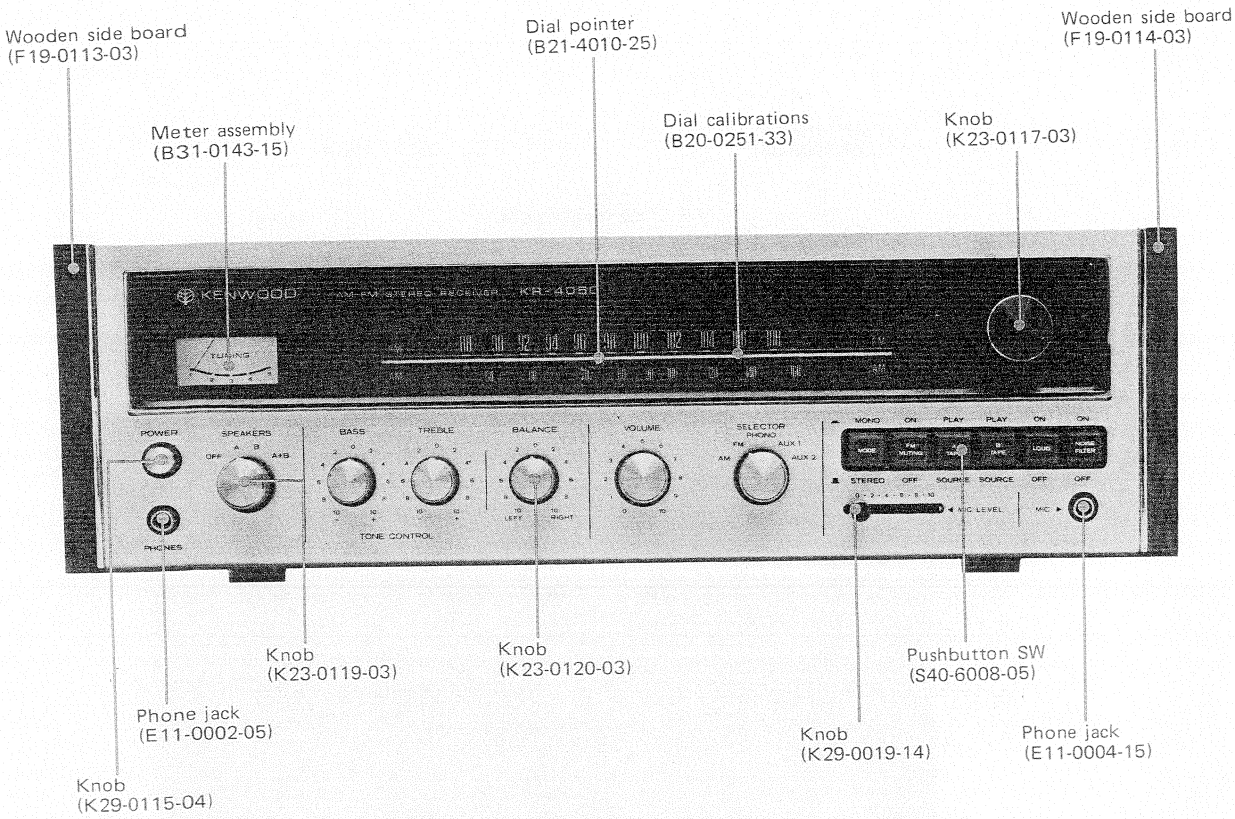
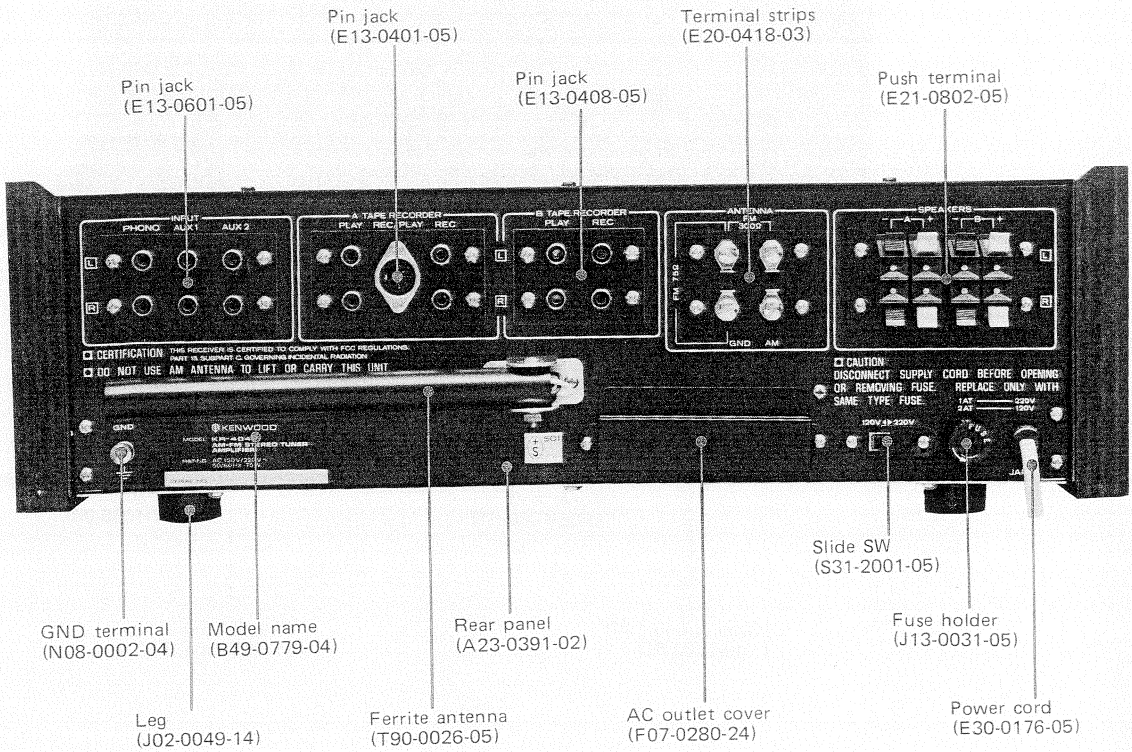
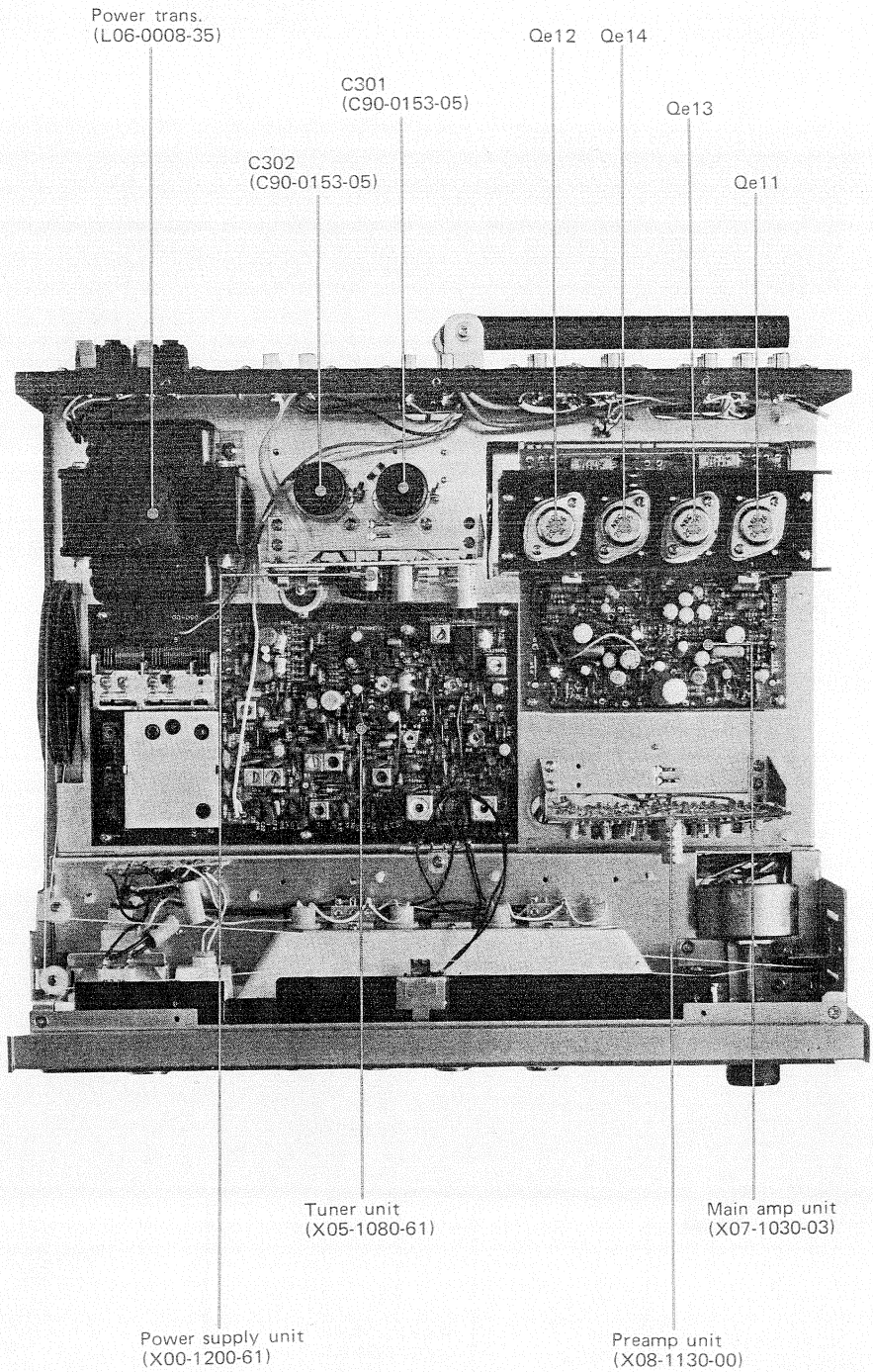
EXTERNAL VIEW

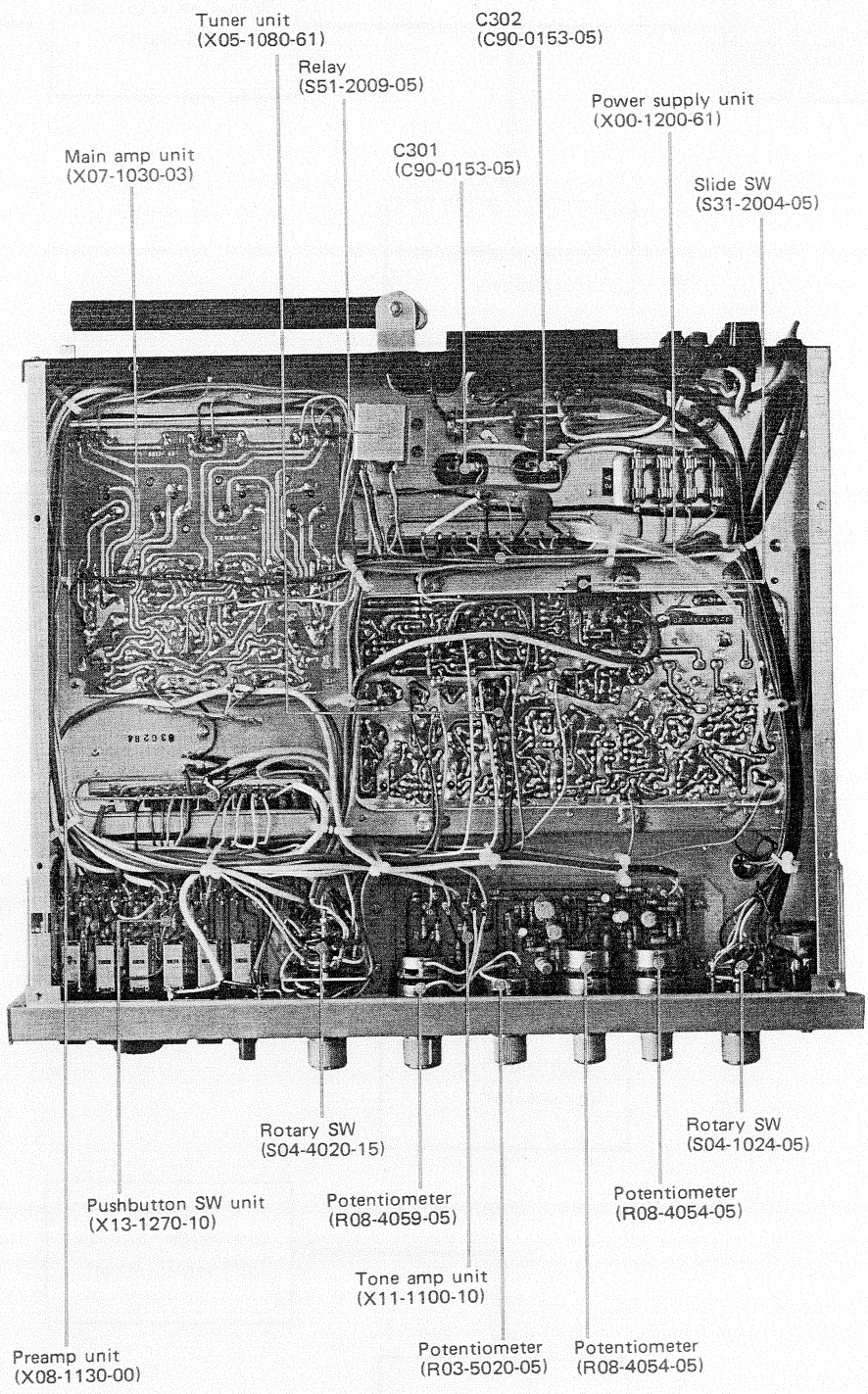




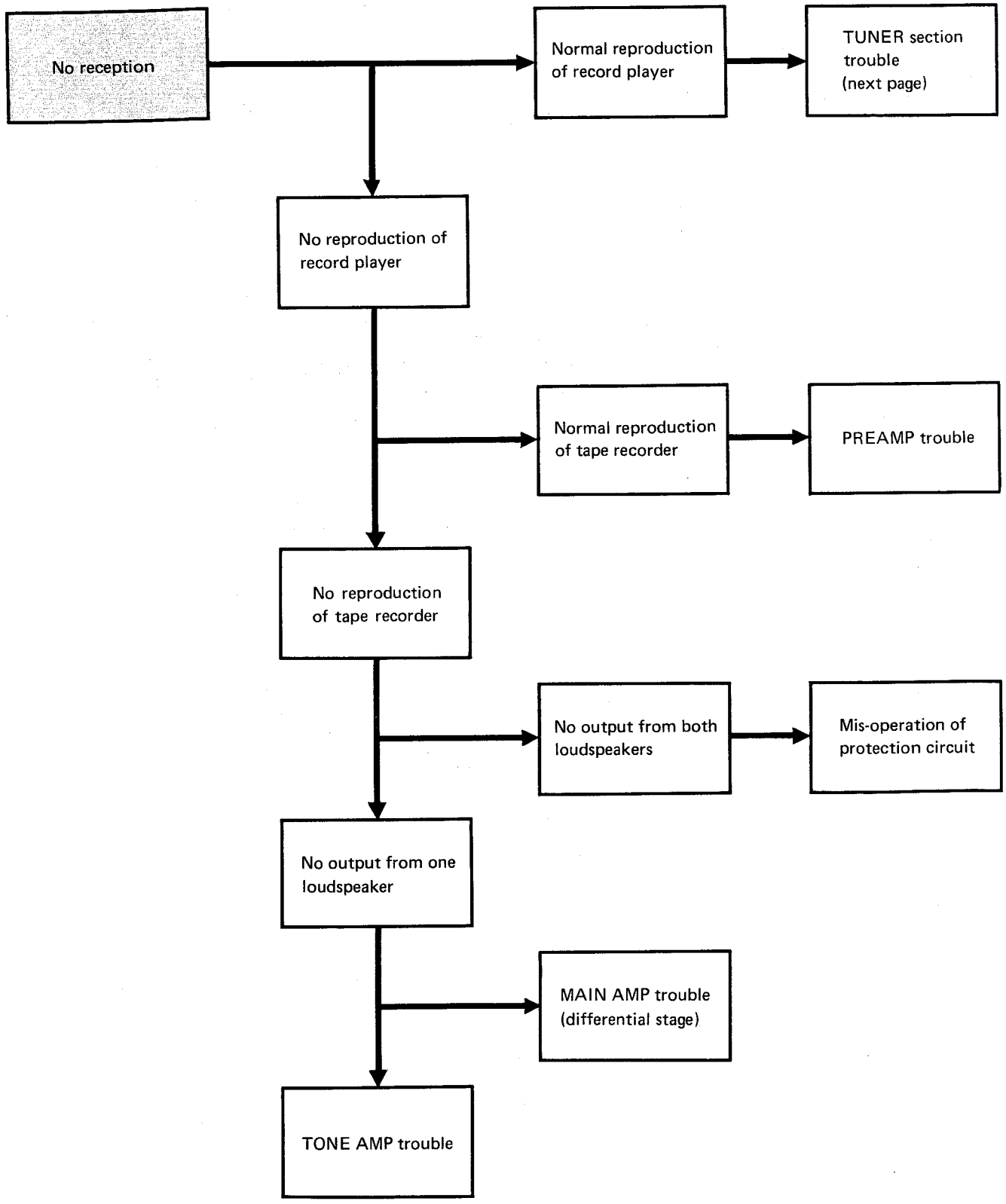
TOP CHASSIS VIEW



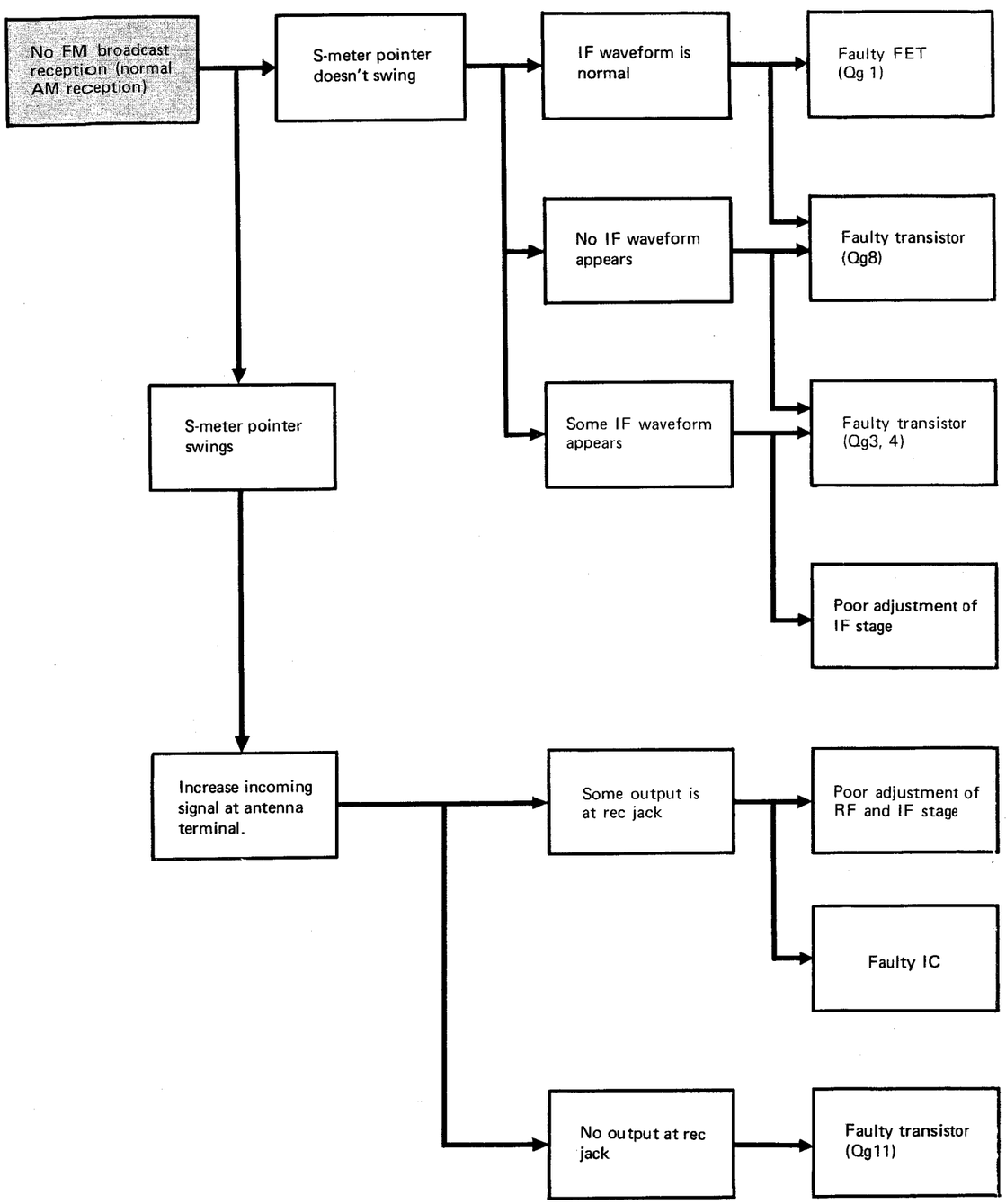
BOTTOM CHASSIS VIEW

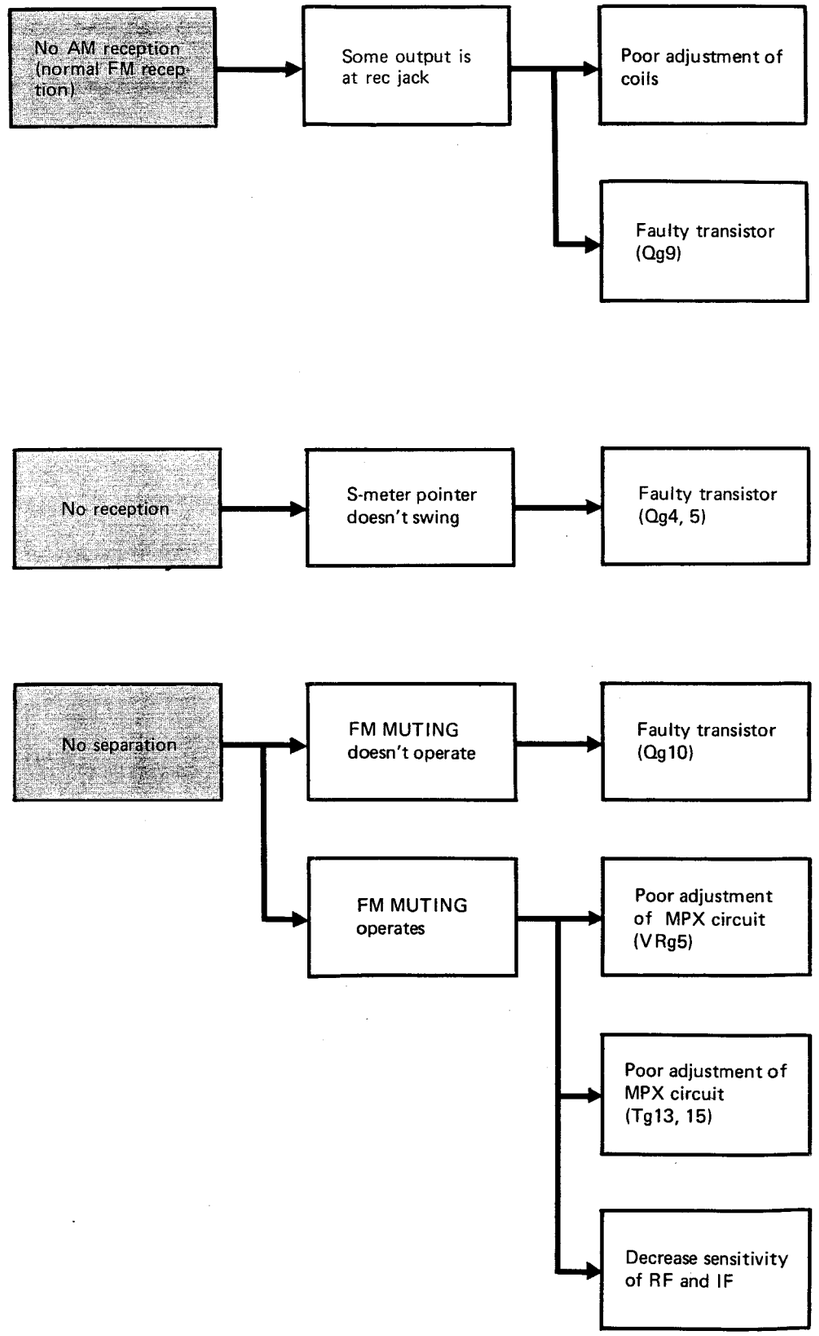


TROUBLESHOOTING

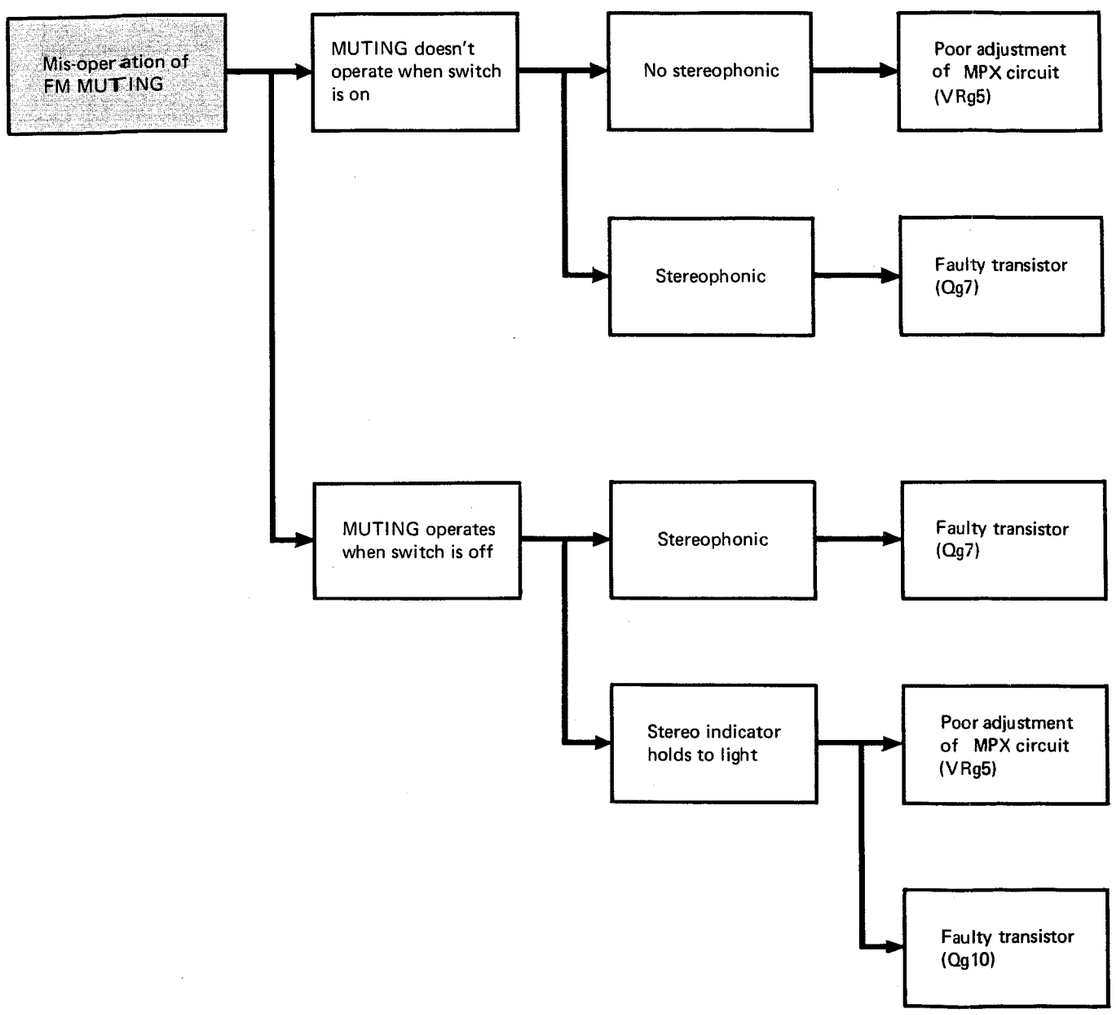

No reception
Normal reproduction of record player
TUNER section trouble (next page)
No reproduction of record player
Normal reproduction of tape recorder
PREAMP trouble
No reproduction of tape recorder
No output from both loudspeakers
Mis-operation of protection circuit
No output from one loudspeaker
MAIN AMP trouble (differential stage)
TONE AMP trouble

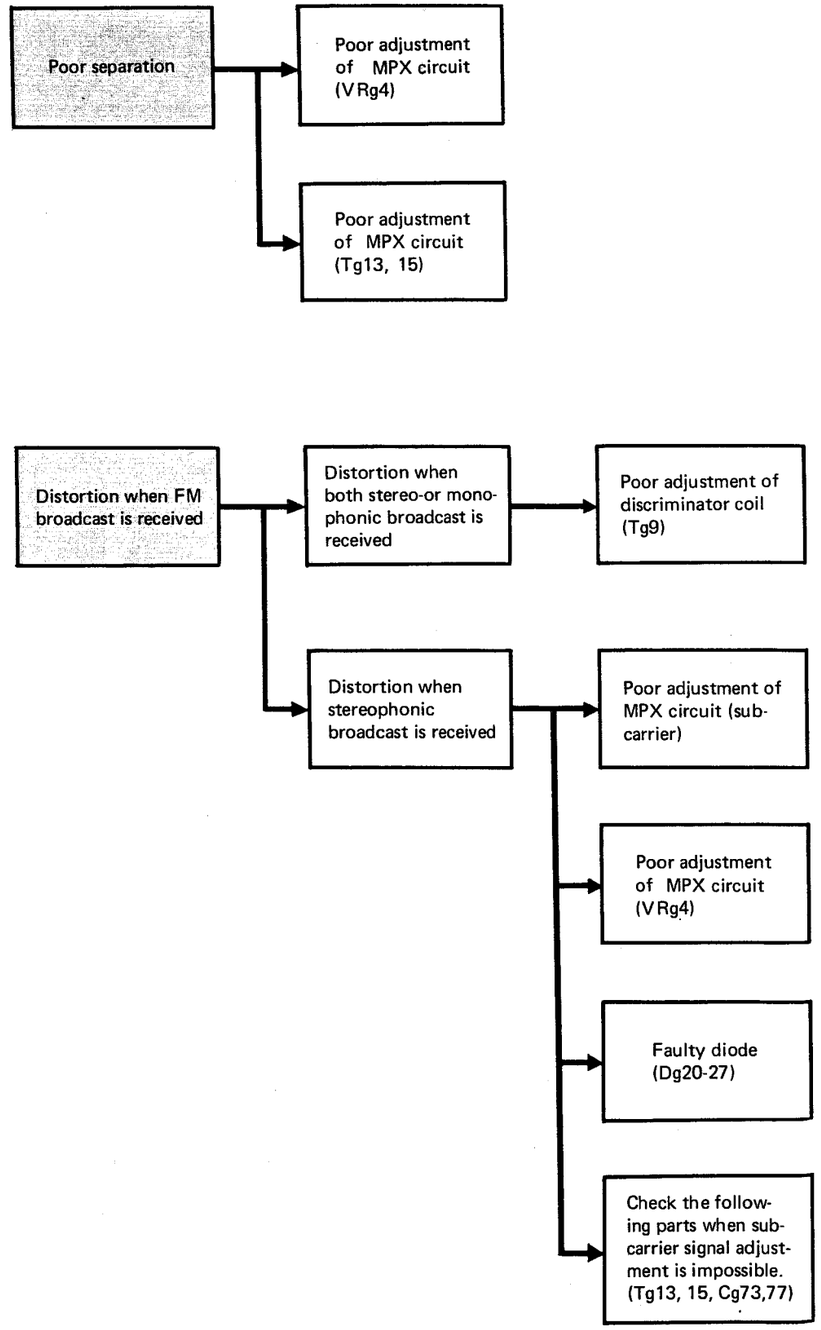
TROUBLESHOOTING


No FM broadcast reception (normal AM reception)
S-meter pointer doesn't swing
IF waveform is normal
Faulty FET (Qg 1)
No IF waveform appears
Faulty transistor (Qg8)
Some IF waveform appears
Faulty transistor (Qg3, 4)
Poor adjustment of IF stage
S-meter pointer swings
Increase incoming signal at antenna terminal.
Some output is at rec jack
Poor adjustment of RF and IF stage
Faulty IC
No output at rec jack
Faulty transistor (Qg11)


No AM reception (normal FM reception)
Some output is at rec jack
Poor adjustment of coils
Faulty transistor (Qg9)
No reception
S-meter pointer doesn't swing
Faulty transistor (Qg4, 5)
No separation
FM MUTING doesn't operate
Faulty transistor (Qg10)
FM MUTING operates
Poor adjustment of MPX circuit (VRg5)
Poor adjustment of MPX circuit (Tg13, 15)
Decrease sensitivity of RF and IF

TROUBLESHOOTING




Poor separation
Poor adjustment of MPX circuit (VRg4)
Poor adjustment of MPX circuit (Tg13, 15)
Distortion when FM broadcast is received
Distortion when both stereo-or monophonic broadcast is received
Poor adjustment of discriminator coil (Tg9)
Distortion when stereophonic broadcast is received
Poor adjustment of MPX circuit (sub-carrier)
Poor adjustment of MPX circuit (VRg4)
Faulty diode (Dg20-27)
Check the following parts when sub-carrier signal adjustment is impossible. (Tg13, 15, Cg73,77)

DESCRIPTION OF CIRCUIT

Protection Circuit

1. Muting Function

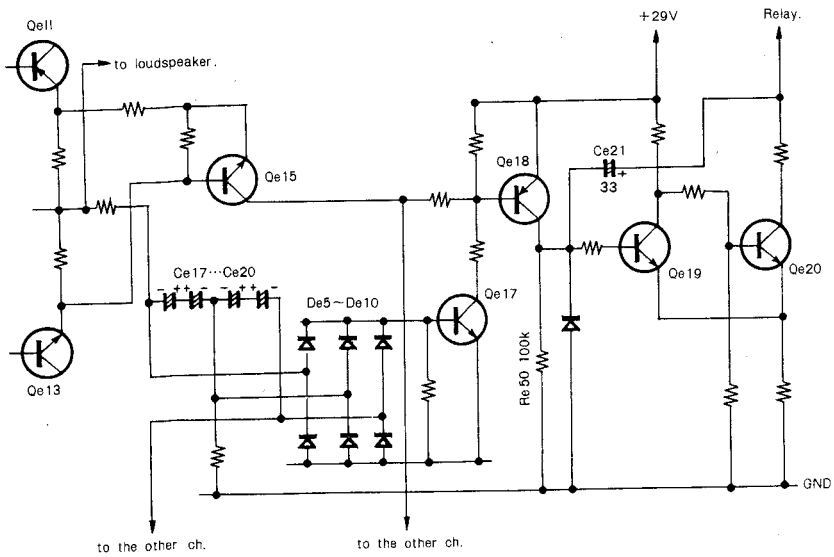
When the power switch is set to ON, shock noise may enter the loudspeaker system due to the effect of overcurrent. In the KR-4050 this is, however, prevented by use of a protection relay. With the power switch set to ON, current of the B source passes through this relay and flows into C_e21 of the main amplifier. When C_e21 has been charged up, the base potential of Q_e19 becomes zero and thus Q_e19 is turned off. Since Q_e20 is turned on and the relay operates. Thus sound can come out of the loud speaker system. The duration of muting (operating time of this relay) is about 3 seconds which is dependent upon the time constant of C_e21 and R_e50 in the circuit.

2. ASO (Area of Safety Operation) Protection

If the power transistor receives a flow of abnormal Ic exceeding the ASO level, the emitter potential will be raised. This potential is detected by Q_e15 or Q_e16 and is delivered to Q_e18. Namely voltage is generated at the emitter, base potential of Q_e15 is raised, and Q_e15 is turned on. Then the base potential of Q_e18 drops since current flows in the transistor of the preceding stage. Consequently Q_e18 also turns on.
In this state, collector current of Q_e18 flows, base potential of Q_e19 is raised, Q_e19 is turned on, Q_e20 is turned off, and the relay operates also. Thus the power transistor can be protected against abnormal current.

3. Center Voltage Drift Protection

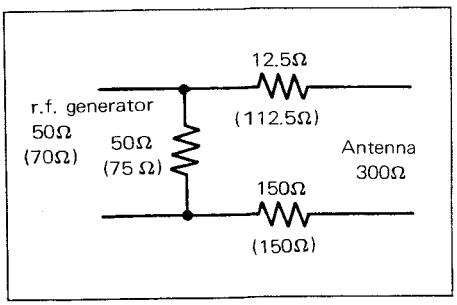
Center potential of the power transistor must always be maintained at zero volt. If center potential causes a drift of more than 0 ±3 volts for a certain fault, this potential will be detected by diodes regardless of the polarity. Thus voltage is applied to the base of Q_e17, which therefore tunrs on. The base potential of Q_e18 drops by collector current and Q_e18 is turned on. In the similar way, the loudspeaker system is protected by the on-off function of the relay.



ADJUSTMENT OF TUNER SECTION

BEFORE ADJUSTMENT

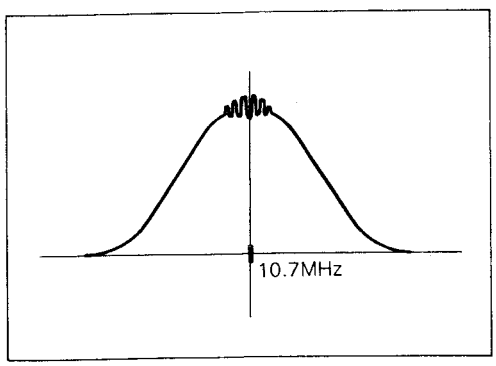
* Tuning dial is set to the proper point corresponding to no radio stations.
* The sweep and the r.f. generator are set to the lowest response possible on oscilloscope.
* When connecting the r.f. generator to the antenna terminal using the dummy antenna . . . . refer to figure.
* Use the insulated screwdriver adjusting the i.f.t..
* SELECTOR is FM position.
* FM MUTING is OFF position unless it is required.
* Test point shown in the circuit diagram.

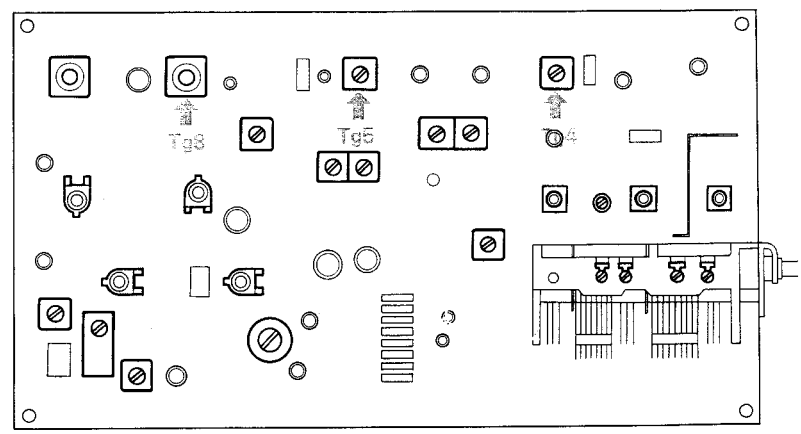


▲ Dummy antenna

ADJUSTING FM-IFT

1. Connect the sweep generator set to 10.7 MHz to test point 1 (TP1) through a capacitor 5pF.
2. Connect the oscilloscope to test point 2.
3. Adjust i. f. t. Tg4, 5, 8 so that the output is at maximum.





ADJUSTING DISCRIMINATOR

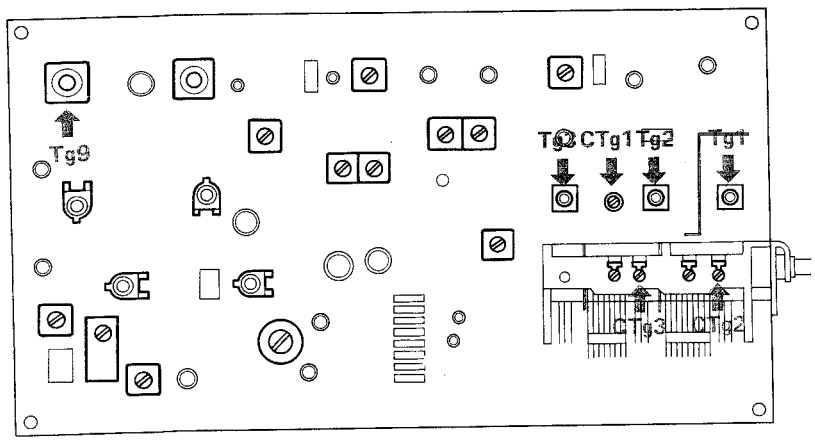
1. Connect the sweep generator set to 10.7 MHz to test point 1 through a capacitor.
2. Connect the oscilloscope to test point 3.
3. Adjust the discriminator coil Tg9 of the secondary so that the output is symmetrical.

ADJUSTING TRACKING

1. Connect the r.f. generator to antenna terminal through a dummy antenna.
2. Set the r.f. generator to 90 MHz, the modulation of 400 Hz, the deviation of 75 kHz, and the input of 10 μV.
3. Connect the VTVM to rec jack.
4. Set the dial pointer to 90 MHz on the dial calibrations.
5. Adjust the core of r. f. t. Tg1, 2 and local oscillator coil Tg3 so that the output is at maximum.

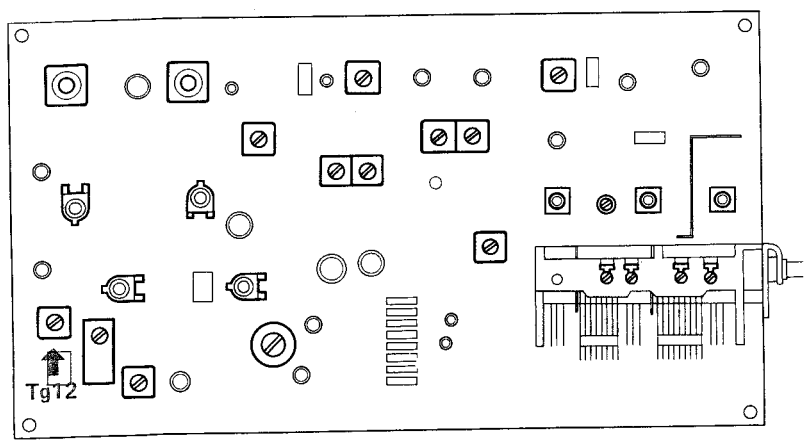
ADJUSTMENT OF TUNER SECTION

1. Set the r.f. generator to 106 MHz, the modulation of 400 Hz, the deviation of 75 kHz and input of 10 μV.
2. Set the dial pointer to 106 MHz on the dial calibrations.
3. Adjust trimmers CTg1 ~ 3 so that the output is at maximum.



ADJUSTING SCA FILTER

1. Connect the audio generator set to 67 kHz to test point 3.
2. Connect the VTVM to test point 4.
3. Adjust the core of Tg12 so that the output is at minimum.



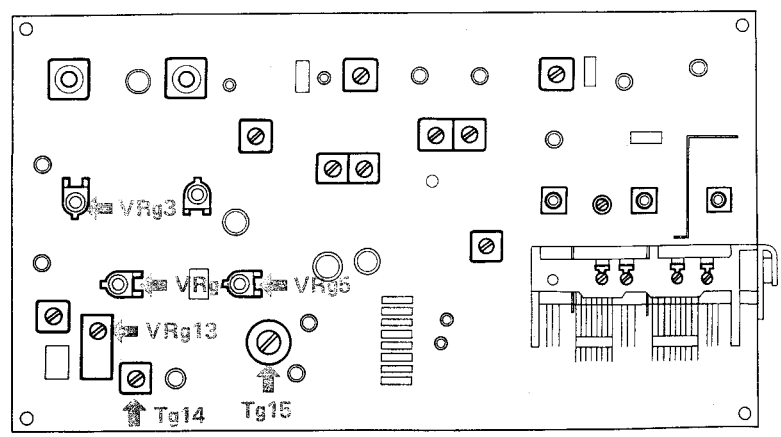
ADJUSTMENT OF TUNER SECTION

ADJUSTING OUTPUT LEVEL

1. Connect the r.f. generator set to 98 MHz, modulation of 400 Hz, deviation of 75 kHz, to antenna terminal through a dummy antenna and VTVM to rec jack.
2. Adjust the potentiometer VRg3 so that the output is 1.5V.

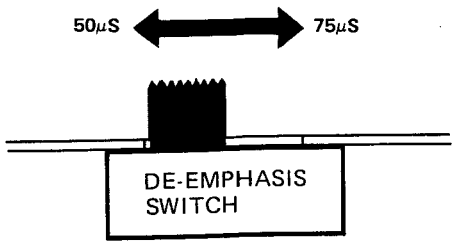
ADJUSTING MPX

1. Set the MPX generator to the followings.
   SELECTOR → A + B PHASE → NORMAL
   MODULATION → 400 Hz DEVIATION → 67.5 kHz
   OUTPUT → EXT jack of r.f. generator
2. Connect the r.f. generator to antenna terminal and the VTVM to test point 5.
3. Adjust the core of Tg13, 14 so that the output is at maximum.
4. Switch the selector of MPX generator to A – B (reverse).
5. Remove the VTVM to rec jack.
6. Adjust the core of Tg15 so that the output is at maximum.
7. Switch the selector and deviation of MPX generator to A + B and 40 kHz.
8. Adjust potentiometer VRg5 so that the stereo indicator is on.
9. Switch the selector of the MPX generator to A (R).
10. Adjust the potentiometer VRg4 so that left output is at minimum.
11. Switch the selector of the MPX generator to B (L).
12 Adjust the potentiometer VRg4 so that the right output is at minimum.



NOTE: In case of difference between right and left channel, set the potentiometer VRg4 to average.

ON DE-EMPHASIS SWITCH: This receiver has been set at the factory to work according to DE-EMPHASIS generally available in the area to which it is shipped. If your DE-EMPHASIS happens to differ, adjustment can be made simply by switching the DE-EMPHASIS switch as follows.



BOTTOM CHASSIS VIEW

ADJUSTING AM-IFT

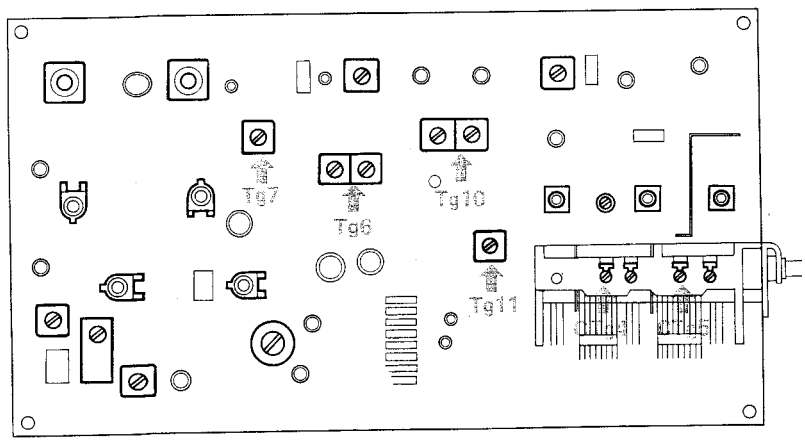
1. Connect the sweep generator set to 455 kHz to test point 6.
2. Connect the oscilloscope to the test point 7.
3. Adjust the core of i. f. t. Tg10, 6, 7 so that the output is at maximum.

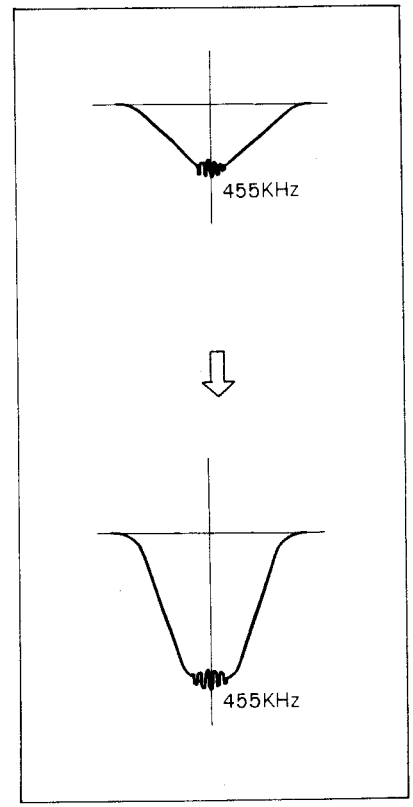
ADJUSTMENT OF TUNER SECTION

ADJUSTING TRACKING

1. Connect the r.f. generator set to 600 kHz, modulation of 30% at 400 Hz to antenna terminal.
2. Connect the VTVM to the rec jack.
3. Set the dial pointer to the 600 kHz on the dial calibrations.
4. Adjust the OSC-trans, Tg11 and ferrite antenna so that the output is at maximum.

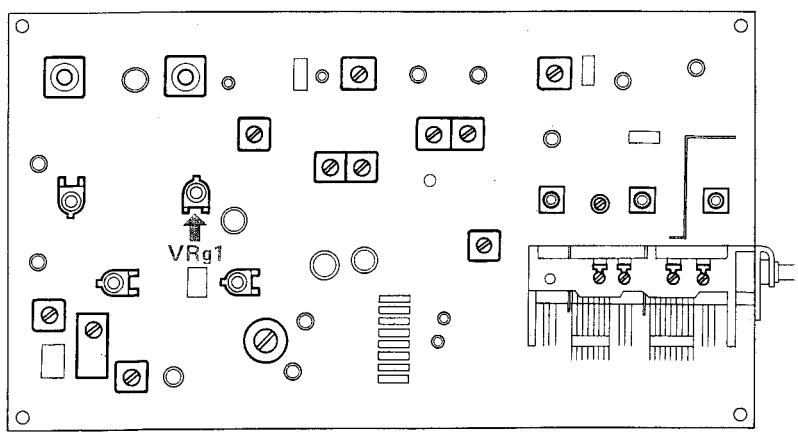
1. Connect the r.f. generator set to 1,400 kHz, modulation of 30% at 400 Hz to antenna terminal.
2. Connect the VTVM to the rec jack.
3. Set the dial pointer to the 1,400 kHz on the dial calibrations.
4. Adjust the trimmer CTg4, 5 so that the output is at maximum.





ADJUSTING METER

1. Connect the r.f. generator to antenna terminal.
2. Set the dial pointer to the 1,000 kHz on the dial calibrations.
3. Adjust potentiometer VRg1 so that the signal meter indicates "5".

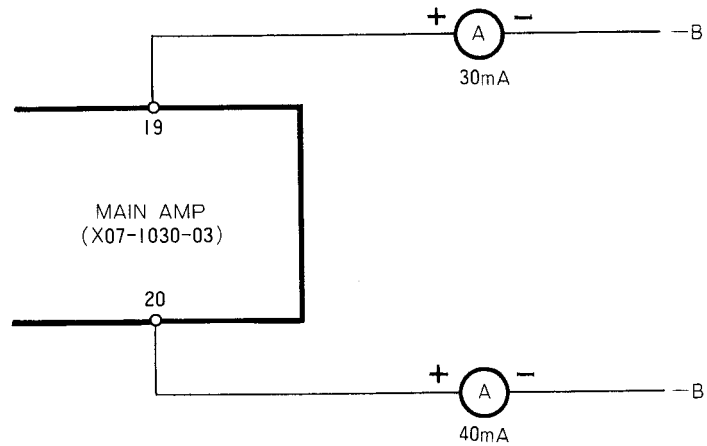


ADJUSTMENT OF AUDIO SECTION

BIAS ADJUSTMENT

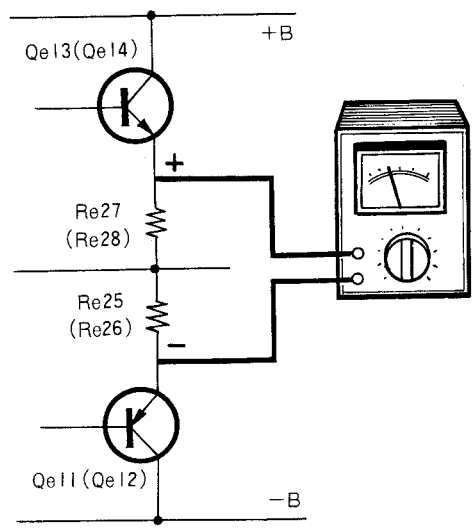
WHEN USING TESTER AS AMMETER

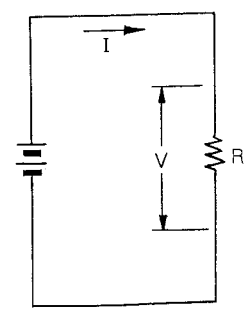
1. Set PC trimmer potentiometer (VRe1, 2) to its min.
2. Couple tester (as ammeter) to terminal 20 and negative power supply lead.
3. Adjust PC trimmer potentiometer (VRe2) so that tester reading is 40mA.
4. Remove tester to terminal 19 and negative power supply lead.
5. Adjust PC trimmer potentiometer (VRe1) so that tester reading is 30mA.



WHEN USING TESTER WITH LOW LEVEL RANGE (LESS THAN .3V RANGE)

1. Set potentiometer (VRe1, 2) to its min..
2. Connect tester (as voltmeter) to emitter of power transistor (Qe12 and Qe14).
3. Adjust PC trimmer potentiometer (VRe2) so that tester reading is 20mV.
4. Remove tester to emitter of power transistor (Qe11 and Qe13).
5. Adjust PC trimmer potentiometer (VRe1) so that tester reading is 20mV.



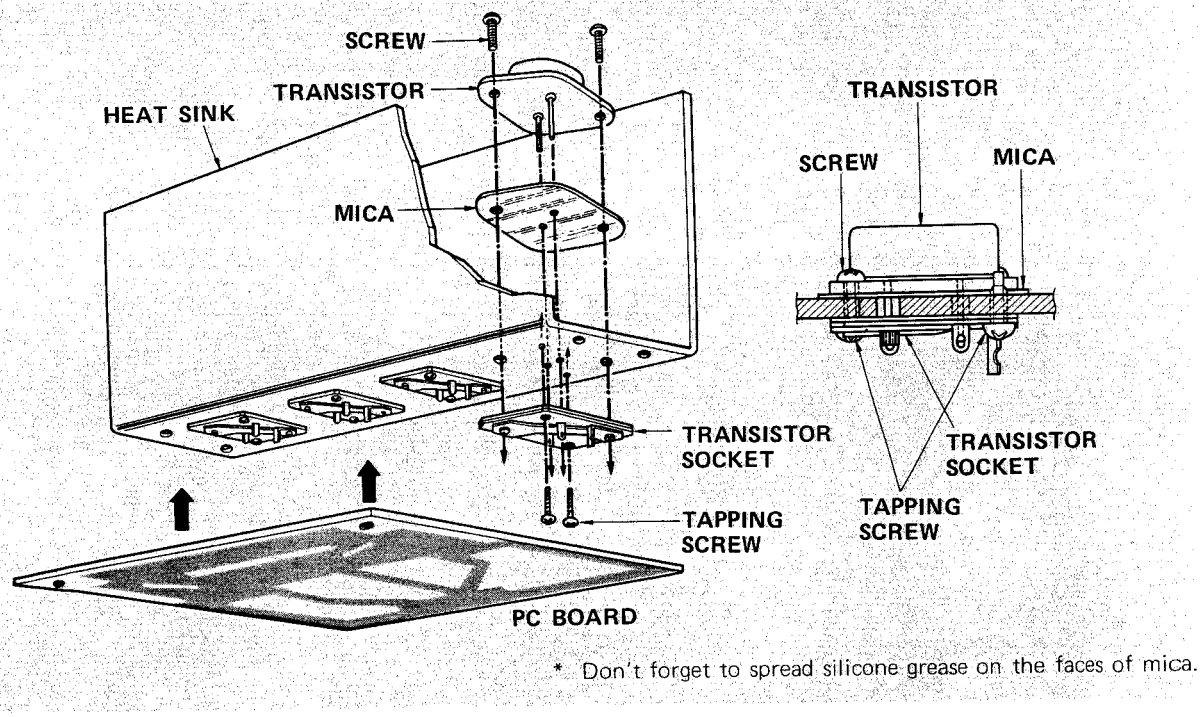


R=Re25+Re26≒1 ohm
V=I×R=20mV

REPLACEMENT OF POWER TRANSISTOR

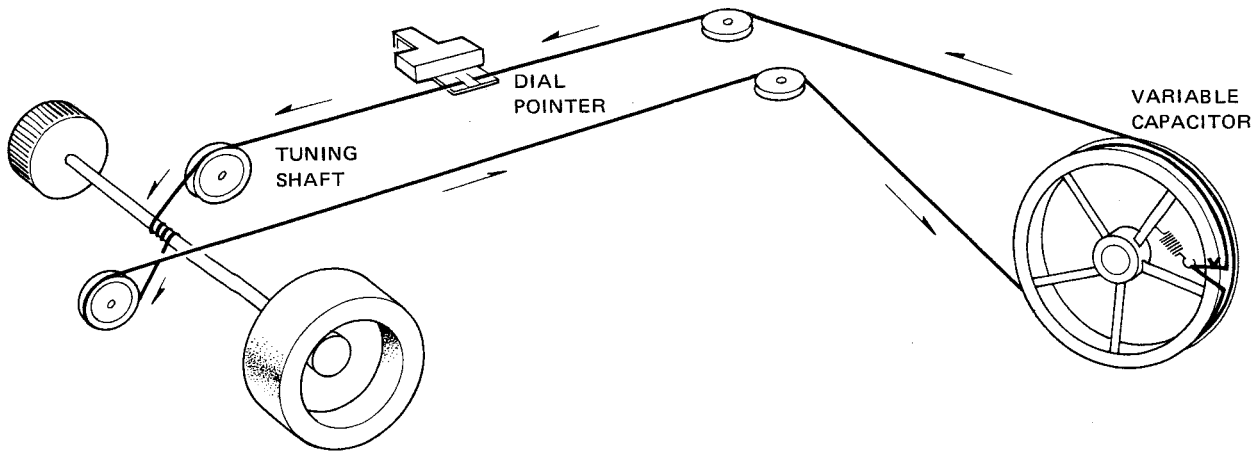
1. Remove screws (not tapping screw).
2. Replace the power transistor with the new.
   At this time, don't forget to spread silicone grease on faces of mica.
3. Fix the power transistor with screw on the heat sink.
4. Check the transistor is not in contact with heat sink.

NOTE: 1. Tapping screw holds the transistor socket. Don't remove it without necessity.
2. Before fixing the transistor, in the case of replacing transistor socket, fix the transistor socket.

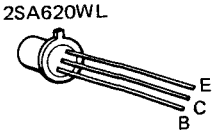


* Don't forget to spread silicone grease on the faces of mica.

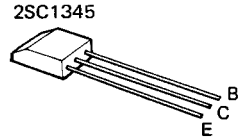
CORD STRINGING & TRANSISTOR LEADS



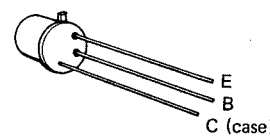
2SA620WL



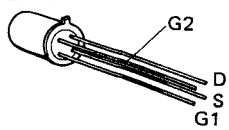
2SC458
2SC1345



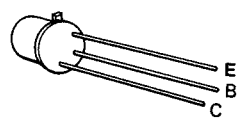
2SD220



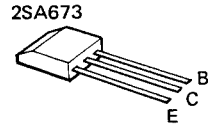
3SK30



2SA621



2SC1213A
2SA673



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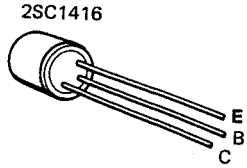
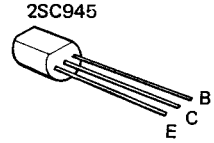


2SA733
2SC945



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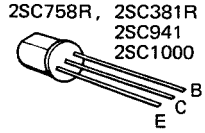
2SC941
2SC1000



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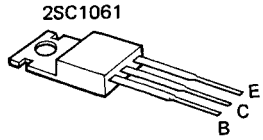

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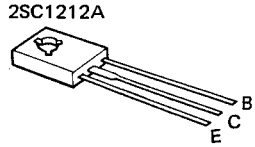
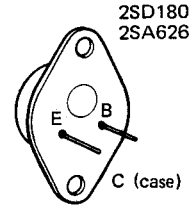
2SC1212A



2SD180
2SA626



SUBSTITUTION TRANSISTOR

Tr. name	Substitution Tr.
(X00-1200-61)	
2SD220	2SC497, 2SC484
2SC945 (Q)	2SC1213A (C), 2SC984 (C)
(X05-1080-61)	
μPC555A	μA703C, CS5995
3SK30 (B) or (C)	2SK-19
2SC785 (R)	–
2SC381 (R)	2SC535 (A) or (B), 2SC460, SE-3001, 2SC380
2SC941 (O)	2SC381 (O)
2SC945 (Q) or (R)	2SC1213A
2SC458 (D)	2SC1000 (GR), 2SC1345 (D)
2SA733A (Q) or (R)	2SA620WL (4) or (5)
2SC1213A (C)	2SC734 (Y), 2SC984 (C)
(X07-1030-03)	
2SA743A (B) or (C)	2SA497, 2SA484
2SA626	2SA649, 2SA627, 2SA746
2SA673A (B)	2SA743A (B)
2SA621-2-3 or 4	2SA743A (B) or (C)
2SC1345 (E)	2SC1000 (BL), 2SC1416 (BL), 2SC1416A (BL)
2SC1212A (B) or (C)	2SC484, 2SC497, 2SC708A
2SC1213A (B) or (C)	2SC984, 2SC734, 2SC1212A
2SD180	2SC1111, 2SD287, 2SC1402
(X08-1130-00)	
2SA620WL4	2SA493 (GR)
2SC1345 (E)	2SC1000 (BL), 2SC1416A (BL)
2SC1345 (D)	2SC1000 (GR), 2SC1416A (GR)
(X11-1100-10)	
2SC1000BL	2SC1416A (BL), 2SC1000 (E)

PARTS LIST

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
C100	CE04W0J221	Electrolytic	220μF	6.3WV		
C101, 102	CQ93M1H222J	Mylar	0.0022μF	±5%		
C103, 104	CK45D1H561M	Ceramic	560pF	±20%		
C300	C90-0145-05	Polyester	0.01μF	±20%		
C301, 302	C90-0153-05	Electrolytic	3300μF	35WV		
C303	CE04W1A331	Electrolytic	330μF	10WV		
C304	CK45E2H103P	Ceramic	0.01μF	+100%	−0%	
		RESISTOR				
R100	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
R120	PD14BY2E394J	Carbon	390kΩ	±5%	1/4W	
R121	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
R122, 123	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
R124, 125	PD14BY2E563J	Carbon	56kΩ	±5%	1/4W	
R150	PD14BY2E221J	Carbon	220Ω	±5%	1/4W	
R171	RC05GF2H331K	Carbon	330Ω	±10%	1/2W	
R220	PD14BY2E394J	Carbon	390kΩ	±5%	1/4W	
R221	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
R222, 223	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
R224, 225	PD14BY2E563J	Carbon	56kΩ	±5%	1/4W	
R250	PD14BY2E221J	Carbon	220Ω	±5%	1/4W	
R271	RC05GF2H331K	Carbon	330Ω	±10%	1/2W	
R301	RC05GF2H270K	Carbon	27Ω	±10%	1/2W	
		SEMICONDUCTOR				
D1		V0-6B				
		SWITCH				
S1	S04-4020-15	Rotary (F. 4. 10. 5) SELECTOR				
S8	S39-2003-05	Pushbutton (SEV) POWER				
S9	S04-1024-05	Rotary (F. 1. 4. 4) SPEAKER				
S10	S31-2001-05	Slide (SEV) Power voltage selector				
S11	S31-2004-05	Slide (SEV) DE-EMPHASIS				
		POTENTIOMETER				
VR1	R13-5011-15	Slide 100k (A) MIC				
		MISCELLANEOUS				
—	A01-0187-02	Case				
—	A10-0330-51	Chassis				
—	A20-0631-02	Panel assembly				
—	A20-0632-02	Panel				
—	A23-0391-02	Rear panel				
—	A30-0070-15	Dial board				
—	A40-0101-33	Bottom plate				
—	B07-0084-04	Black spacer				
—	B10-0118-02	Front glass				
—	B19-0134-14	White filter				
—	B20-0251-33	Dial calibrations				
—	B21-4010-25	Dial pointer (Yellow)				
—	B30-0064-15	Pilot lamp (50mA, BEACON)				
—	B30-0068-05	Pilot lamp (Meter)				
—	B30-0069-05	Pilot lamp (300mA, Reflector)				
—	B31-0143-15	Meter assembly				

PARTS LIST

Ref. No.	Parts No.	Description	Remarks
–	B40-0779-04	Model name plate	
–	B41-0141-04	Fuse sticker (4AT)x 2	
–	B41-0174-04	Fuse sticker (2A x 4)	
–	B42-0009-04	Passed sticker	
–	B42-0024-04	SEV sticker (Power voltage selector)	
–	B42-0262-24	SEV sticker (Rear panel)	
–	B42-0400-04	De-emphasis sticker	
–	B50-0962-00	Instruction manual	
–	B52-0149-00	Schematic diagram	
–	B58-0108-00	Spare fuse caution card	
–	B58-0156-00	Power supply caution card	
–	B58-0157-00	Power voltage selector caution card	
–	D01-0009-15	Flywheel	
–	D15-0034-05	Pulley	
–	D15-0073-14	Pulley (Middle size) x 2	
–	D15-0075-04	Pulley (Small size) x 2	
–	D20-0092-15	Dial shaft	
–	D32-0021-04	Switch stopper	
–	E08-0221-05	AC outlet x 2	
–	E11-0002-05	Phone jack (PHONES)	
–	E11-0004-15	Phone jack (MIC)	
–	E13-0401-05	Pin jack (4P with DIN)	
–	E13-0408-05	Pin jack (4P)	
–	E13-0601-05	Pin jack (6P)	
–	E20-0418-03	Terminal strips (4P)	
–	E21-0802-05	Push terminal (8P)	
–	E30-0176-05	Power cord (SEV. SEMKO)	
–	F05-2029-05	Fuse (2A) SEMKO x 4	
–	F05-4025-05	Fuse (4A) SEMKO x 2	
–	F06-1022-05	Fuse (1AT) SEMKO x 2	
–	F06-2021-05	Fuse (2AT) SEMKO x 2	
–	F07-0280-24	AC outlet cover	
–	F19-0113-03	Wooden side board (L)	
–	F19-0114-03	Wooden side board (R)	
–	F20-0065-14	Insulator (TONE)	
–	F99-0009-14	Slider	
–	G01-0044-04	Dial spring	
–	G16-0046-04	Rubber sheet (20 x 28 x 3)	
–	G16-0048-04	Rubber sheet (20 x 28 x 3)	
–	H01-0924-04	Carton case	
–	H03-0223-04	Carton case	
–	J02-0049-14	Leg x 4	
–	J13-0027-05	Fuse holder (Clip type) SEMKO x 6	
–	J13-0031-05	Fuse holder (Screw type) SEMKO x 6	
–	J19-0286-14	Dial calibrations stopper	
–	J19-0288-34	Meter stopper	
–	J19-0289-04	Frontglass stopper x 2	
–	J19-0290-44	Side board (L)	
–	J19-0291-34	Side board (R)	
–	J19-0301-33	Dial calibrations stopper	
–	J19-0302-33	Frontglass stopper	

PARTS LIST

Ref. No.	Parts No.	Description	Remarks
–	J19-0333-04	Guide hardware	
–	J21-0192-04	Amp stopper x 2	
–	J21-0806-14	Antenna mounting hardware	
–	J21-0977-14	Switch mounting hardware	
–	J21-1015-44	L shaped hardware	
–	J21-1016-14	Pilot lamp mounting hardware	
–	J21-1081-14	Relay mounting hardware	
–	J21-1116-04	Fuse holder mounting hardware	
–			
–	K23-0117-03	Knob (TUNING)	
–	K23-0119-03	Knob (SPEAKER) x 3	
–	K23-0120-03	Knob (BALANCE) x 3	
–	K29-0019-14	Knob (MIC)	
–	K29-0115-04	Knob (POWER)	
–	K29-0124-13	Knob (TAPE A)	
–	K29-0125-13	Knob (TAPE B)	
–	K29-0126-13	Knob (LOUDNESS)	
–	K29-0127-13	Knob (NOISE FILTER)	
–	K29-0128-13	Knob (FM MUTING)	
–	K29-0129-13	Knob (MODE)	
–	L06-0008-35	Power transformer	
–	S51-2009-05	Relay	
–	T90-0002-05	FM indoor antenna	
–	T90-0026-05	Ferrite antenna	
–	X00-1200-61	POWER SUPPLY unit	
–	X05-1080-61	TUNER unit	
–	X07-1030-03	MAIN AMP unit	
–	X08-1130-00	PREAMP unit	
–	X11-1100-10	TONE AMP unit	
–	X13-1270-10	PUSHBUTTON unit	

POWER SUPPLY (X00-1200-61) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Ck1	CE02W1J471	Electrolytic	470μF	63WV		
Ck2	CE04W1H010	Electrolytic	1μF	50WV		
Ck3	CE04W1H100	Electrolytic	10μF	50WV		
Ck4	CE04W1H3R3	Electrolytic	3.3μF	50WV		
Ck5	CE04W1J100	Electrolytic	10μF	63WV		
Ck6	CE04W1H330	Electrolytic	33μF	50WV		
Ck7	CP02B2J103M	Oil filled	0.01μF	±20%		
Ck8	CE04W1C331	Electrolytic	330μF	16WV		
Ck9	CE04W1C100	Electrolytic	10μF	16WV		
		RESISTOR				
Rk1	RC05GF2H5R6K	Carbon	5.6Ω	±10%	1/2W	
Rk2	RC05GF2H2R2K	Carbon	2.2Ω	±10%	1/2W	
Rk3	PD14BY2E392J	Carbon	3.9kΩ	±5%	1/4W	
Rk4	PD14BY2E472J	Carbon	4.7kΩ	±5%	1/4W	
Rk5	PD14BY2E392J	Carbon	3.9kΩ	±5%	1/4W	
Rk6	PD14BY2E822J	Carbon	8.2kΩ	±5%	1/4W	
Rk7	PD14BY2E682J	Carbon	6.8kΩ	±5%	1/4W	
Rk8	RW14AG3G271J	Wire wound	270Ω	±5%	4W	
Rk9	RN14AB3D221J	Metal film	220Ω	±5%	2W	
Rk10	PD14BY2E394J	Carbon	390kΩ	±5%	1/4W	
		SEMICONDUCTOR				
Qk1		2SD220				
Qk2, 3		2SC945 (Q)				
Dk1		S1RB-10				
Dk2, 3		V06B				
Dk4		1S388T				
Dk5		V06B				
		MISCELLANEOUS				
–	B41-0134-04	Fuse sticker (1A)				
–	B41-0138-04	Fuse sticker (2A)				
–	F02-0007-05	Heat sink				
–	F05-2029-05	Fuse (2A) SEMKO				
–	F06-1021-05	Fuse (1A) SEMKO				
–	J13-0032-05	Fuse holder x 2				
–	J21-1003-04	PC board mounting hardware (L)				
–	J21-1004-04	PC board mounting hardware (R)				

TUNER (X05-1080-61) PARTS LIST

Ref. No.	Parts No.	Description			Remarks
		CAPACITOR			
Cg1	CC45SL1H150K	Ceramic	15pF	±10%	
Cg2	CC45SL1H101K	Ceramic	100pF	±10%	
Cg3	CK45F1H103Z	Ceramic	0.01μF	+80% −20%	
Cg4	CC45SL1H030C	Ceramic	3pF	±0.25pF	
Cg5, 6	CK45F1H103Z	Ceramic	0.01μF	+80% −20%	
Cg7	CC45SL1H180K	Ceramic	18pF	±10%	
Cg8	CC45SL1H270K	Ceramic	27pF	±10%	
Cg9	CC45SL1H100D	Ceramic	10pF	±0.5pF	
Cg10	CC45SL1H221K	Ceramic	220pF	±10%	
Cg11	CK45F1H103Z	Ceramic	0.01μF	+80% −20%	
Cg12	CC45SL1H100D	Ceramic	10pF	±0.5pF	
Cg13	CC45TH1H020C	Ceramic	2pF	±0.25pF	
Cg14	CK45F1H223Z	Ceramic	0.022μF	+80% −20%	
Cg15	CC45SG1H220K	Ceramic	22pF	±10%	
Cg16	CC45SG1H470K	Ceramic	47pF	±10%	
Cg17	CC45SG1H220K	Ceramic	22pF	±10%	
Cg18	CC45TH1H150K	Ceramic	15pF	±10%	
Cg19~26	CK45F1H223Z	Ceramic	0.022μF	+80% −20%	
Cg27, 28	CM93D1H102J(Z)	Mica	1000pF	±5%	
Cg32	CC45SL1H050D	Ceramic	5pF	±0.5pF	
Cg33	CQ93M1H223K	Mylar	0.022μF	±10%	
Cg34	CM93D1H102J(Z)	Mica	1000pF	±5%	
Cg35	CK45F1H223Z	Ceramic	0.022μF	+80% −20%	
Cg36	CK45F1H103Z	Ceramic	0.01μF	+80% −20%	
Cg37	CQ93M1H102K	Mylar	0.001μF	±10%	
Cg38	CK45F1H223Z	Ceramic	0.022μF	+80% −20%	
Cg39	CQ93M1H472J	Mylar	0.0047μF	±5%	
Cg40	CC45SL1H050D	Ceramic	5pF	±0.5pF	
Cg41	CK45B1H471K	Ceramic	470pF	±10%	
Cg42~44	CK45F1H223Z	Ceramic	0.022μF	+80% −20%	
Cg45, 46	CC45SL1H221K	Ceramic	220pF	±10%	
Cg47	CE04W1E100	Electrolytic	10μF	25WV	
Cg49	CE04W1C101	Electrolytic	100μF	16WV	
Cg50	CC45SL1H101K	Ceramic	100pF	±10%	
Cg52, 53	CQ93M1H103K	Mylar	0.01μF	±10%	
Cg54	CE04W1H3R3	Electrolytic	3.3μF	50WV	
Cg56	CK45F1H223Z	Ceramic	0.022μF	+80% −20%	
Cg58	CE04W1E100	Electrolytic	10μF	25WV	
Cg59~62	CK45F1H223Z	Ceramic	0.022μF	+80% −20%	
Cg63	CE04W1E100	Electrolytic	10μF	25WV	
Cg64	CQ93M1H472J	Mylar	0.0047μF	±5%	
Cg65, 66	CQ93M1H103K	Mylar	0.01μF	±10%	
Cg67	CK45B1H361K	Ceramic	360pF	±10%	
Cg68	CC45SL1H180K	Ceramic	18pF	±10%	
Cg69	CE04W1E100	Electrolytic	10μF	25WV	
Cg70	CM93D1H391J(Z)	Mica	390pF	±5%	
Cg71	CE04W1H010	Electrolytic	1μF	50WV	
Cg72	CQ93M1H223K	Mylar	0.022μF	±10%	
Cg73	CQ08S1H472J	Polystyrene	0.0047μF	±5%	
Cg75	CQ93M1H822J	Mylar	0.0082μF	±5%	
Cg76	CE04W1H010	Electrolytic	1μF	50WV	
Cg77	CQ08S1H472J	Polystyrene	0.0047μF	±5%	
Cg78	CE04W1E100	Electrolytic	10μF	25WV	
Cg79	CE04W0J470	Electrolytic	47μF	6.3WV	
Cg80	CS04E1ER47M	Tantalum	0.47μF	25WV	
Cg81, 82	CQ93M1H472J	Mylar	0.0047μF	±5%	

TUNER (X05-1080-61) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
Cg83	CS04E1ER47M	Tantalum	0.47μF	25WV		
Cg85	CQ93M1H223K	Mylar	0.022μF	±10%		
Cg86, 87	CQ08S1H102J	Polystyrene	0.001μF	±5%		
Cg88	CS04E1ER22M	Tantalum	0.22μF	25WV		
VC	C01-0171-05	Variable capacitor				
CTg3	C05-0009-15	Ceramic trimmer (6pF)				
		RESISTOR				
Rg1	PD14BY2B104J	Carbon	100kΩ	±5%	1/8W	
Rg2	PD14BY2B330J	Carbon	33Ω	±5%	1/8W	
Rg3	PD14BY2B471J	Carbon	470Ω	±5%	1/8W	
Rg4	PD14BY2B104J	Carbon	100kΩ	±5%	1/8W	
Rg5	PD14BY2B562J	Carbon	5.6kΩ	±5%	1/8W	
Rg6	PD14BY2B472J	Carbon	4.7kΩ	±5%	1/8W	
Rg7	PD14BY2B223J	Carbon	22kΩ	±5%	1/8W	
Rg8	PD14BY2B102J	Carbon	1kΩ	±5%	1/8W	
Rg9	PD14BY2B562J	Carbon	5.6kΩ	±5%	1/8W	
Rg10	PD14BY2B392J	Carbon	3.9kΩ	±5%	1/8W	
Rg11	PD14BY2B223J	Carbon	22kΩ	±5%	1/8W	
Rg12	PD14BY2B391J	Carbon	390Ω	±5%	1/8W	
Rg13	PD14BY2B331J	Carbon	330Ω	±5%	1/8W	
Rg14	PD14BY2B102J	Carbon	1kΩ	±5%	1/8W	
Rg15	PD14BY2B391J	Carbon	390Ω	±5%	1/8W	
Rg16	PD14BY2B393J	Carbon	39kΩ	±5%	1/8W	
Rg17	PD14BY2B103J	Carbon	10kΩ	±5%	1/8W	
Rg18	PD14BY2B223J	Carbon	22kΩ	±5%	1/8W	
Rg19	PD14BY2B332J	Carbon	3.3kΩ	±5%	1/8W	
Rg20	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rg21, 22	PD14BY2B102J	Carbon	1kΩ	±5%	1/8W	
Rg23	PD14BY2B222J	Carbon	2.2kΩ	±5%	1/8W	
Rg24	PD14BY2B223J	Carbon	22kΩ	±5%	1/8W	
Rg25	PD14BY2B562J	Carbon	5.6kΩ	±5%	1/8W	
Rg26	PD14BY2B183J	Carbon	18kΩ	±5%	1/8W	
Rg29	PD14BY2B470J	Carbon	47Ω	±5%	1/8W	
Rg30, 31	PD14BY2B561J	Carbon	560Ω	±5%	1/8W	
Rg32	PD14BY2B332J	Carbon	3.3kΩ	±5%	1/8W	
Rg33	PD14BY2B223J	Carbon	22kΩ	±5%	1/8W	
Rg34	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rg35	PD14BY2B562J	Carbon	5.6kΩ	±5%	1/8W	
Rg36	PD14BY2B561J	Carbon	560Ω	±5%	1/8W	
Rg37	PD14BY2B562J	Carbon	5.6kΩ	±5%	1/8W	
Rg38	PD14BY2B103J	Carbon	10kΩ	±5%	1/8W	
Rg39	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rg40	PD14BY2B682J	Carbon	6.8kΩ	±5%	1/8W	
Rg41, 42	PD14BY2B333J	Carbon	33kΩ	±5%	1/8W	
Rg43, 44	PD14BY2B222J	Carbon	2.2kΩ	±5%	1/8W	
Rg45, 46	PD14BY2B682J	Carbon	6.8kΩ	±5%	1/8W	
Rg48	PD14BY2B102J	Carbon	1kΩ	±5%	1/8W	
Rg49, 50	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rg51	PD14BY2B562J	Carbon	5.6kΩ	±5%	1/8W	
Rg52	PD14BY2B223J	Carbon	22kΩ	±5%	1/8W	
Rg53	PD14BY2B104J	Carbon	100kΩ	±5%	1/8W	
Rg54	PD14BY2B103J	Carbon	10kΩ	±5%	1/8W	
Rg55	PD14BY2B563J	Carbon	56kΩ	±5%	1/8W	
Rg56	PD14BY2B562J	Carbon	5.6kΩ	±5%	1/8W	
Rg57	PD14BY2B222J	Carbon	2.2kΩ	±5%	1/8W	
Rg58	PD14BY2B682J	Carbon	6.8kΩ	±5%	1/8W	
Rg59	PD14BY2B102J	Carbon	1kΩ	±5%	1/8W	

TUNER (X05-1080-61) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
Rg60	PD14BY2B103J	Carbon	10kΩ	±5%	1/8W	
Rg61	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rg62	PD14BY2B473J	Carbon	47kΩ	±5%	1/8W	
Rg63	PD14BY2B103J	Carbon	10kΩ	±5%	1/8W	
Rg64	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rg65	PD14BY2B102J	Carbon	1kΩ	±5%	1/8W	
Rg66	PD14BY2B563J	Carbon	56kΩ	±5%	1/8W	
Rg67	PD14BY2B124J	Carbon	120kΩ	±5%	1/8W	
Rg68	PD14BY2B471J	Carbon	470Ω	±5%	1/8W	
Rg69	PD14BY2B330J	Carbon	33Ω	±5%	1/8W	
Rg70	PD14BY2B101J	Carbon	100Ω	±5%	1/8W	
Rg71	PD14BY2B102J	Carbon	1kΩ	±5%	1/8W	
Rg72	PD14BY2B101J	Carbon	100Ω	±5%	1/8W	
Rg74	PD14BY2B471J	Carbon	470Ω	±5%	1/8W	
Rg75	PD14BY2B222J	Carbon	2.2kΩ	±5%	1/8W	
Rg76	PD14BY2B330J	Carbon	33Ω	±5%	1/8W	
Rg77~84	PD14BY2B103J	Carbon	10kΩ	±5%	1/8W	
Rg85~87	PD14BY2B823J	Carbon	82kΩ	±5%	1/8W	
Rg89	PD14BY2B823J	Carbon	82kΩ	±5%	1/8W	
Rg90, 91	PD14BY2B153J	Carbon	15kΩ	±5%	1/8W	
Rg92, 93	PD14BY2B113J	Carbon	11kΩ	±5%	1/8W	
Rg101	PD14BY2B101J	Carbon	100Ω	±5%	1/8W	
SEMICONDUCTOR						
Qg1		3SK30 (B) or (C)				
Qg2~4		2SC381 (R)				
Qg5, 6		2SC535 (B)				
Qg7		2SC945 (Q) or (R)				
Qg8		2SC785 (R)				
Qg9		2SC941 (O)				
Qg10		2SA733 (Q) or (R)				
Qg11, 12		2SC458 (D)				
Qg13		2SC1213A (C)				
Qg14		2SC941 (O)				
ICg1		μPC555A (R) or (B)				
Dg1		1N60				
Dg3, 4		1S1555 or 1S2076				
Dg5~12		1N60				
Dg13		1S1555 or 1S2076				
Dg14~18		1N60				
Dg19		1S1555 or 1S2076				
Dg20~27		1N60				
Dg29, 30		MV-13				
Zg1		DZ-140				
TRANS/COIL/FILTER						
Tg1	L34-0410-05	FM-ANT coil				
Tg2	L34-0408-05	FM-RF coil				
Tg3	L34-0409-05	FM-OSC coil				
Tg4	L30-0176-05	FM-IFT				
Tg5	L30-0247-05	FM-IFT				
Tg6	L30-0250-05	AM-IFT				
Tg7	L30-0052-05	AM-IFT				
Tg8	L30-0248-05	FM-IFT				
Tg9	L30-0207-15	Discriminator coil				
Tg10	L30-0249-05	AM-IFT				
Tg11	L30-0082-05	AM-OSC coil				
Tg12	L35-0054-05	MPX coil				
Tg13	L35-0052-05	MPX coil				

TUNER (X05-1080-61) PARTS LIST

Ref. No.	Parts No.	Description	Remarks
Tg14	L35-0054-05	MPX coil	
Tg15	L35-0053-05	MPX coil	
Lg1	L33-0086-05	Ferri-inductor	
Lg2	L33-0027-04	Choke coil	
Lg3, 4	L33-0026-04	Choke coil	
Lg5	L33-0190-05	Ferri-inductor	
Lg6~9	L33-0086-05	Ferri-inductor	
Lg10, 11	L33-0179-05	Ferri-inductor	
CFg1, 2	L72-0014-05	Ceramic filter	
		POTENTIOMETER	
VRg1	R12-2016-05	PC trimmer (AM-METER) 5kΩ (B)	
VRg3	R12-3029-05	PC trimmer (FM-OUTPUT) 30kΩ (B)	
VRg4	R12-0047-05	PC trimmer (SEPARATION) 500Ω (B)	
VRg5	R12-4019-05	PC trimmer (BEACON) 50kΩ (B)	
		MISCELLANEOUS	
–	F10-0279-14	Shield plate	
–	F10-0280-03	Shield plate	

MAIN AMP (X07-1030-03) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Ce1, 2	CC94SL1H221K	Ceramic	220pF	±10%		
Ce3, 4	CE04W1H010	Electrolytic	1μF	50WV		
Ce5, 6	CE04W0F470	Electrolytic	47μF	3.15WV		
Ce9, 10	CC94SL1H470K	Ceramic	47pF	±10%		
Ce11, 12	CE04W0F470	Electrolytic	47μF	3.15WV		
Ce13, 14	CE04W1V470	Electrolytic	47μF	35WV		
Ce15, 16	CQ93M1H224M	Mylar	0.22μF	±20%		
Ce17~20	CE04W0F101	Electrolytic	100μF	3.15WV		
Ce21	CE04W1H330MBR	Electrolytic	33μF	50WV		
Ce22, 23	CP02B2J223M	Oil filled	0.022μF	±20%		
Ce24	CE04W1V221	Electrolytic	220μF	35WV		
Ce25, 26	CK45F1H203Z	Ceramic	0.02μF	+80%	−20%	
		RESISTOR				
Re1, 2	PD14BY2E183J	Carbon	18kΩ	±5%	1/4W	
Re3, 4	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
Re5, 6	PD14BY2E563J	Carbon	56kΩ	±5%	1/4W	
Re7, 8	PD14BY2E122J	Carbon	1.2kΩ	±5%	1/4W	
Re9, 10	PD14BY2E183J	Carbon	18kΩ	±5%	1/4W	
Re11, 12	PD14BY2E561J	Carbon	560Ω	±5%	1/4W	
Re13, 14	PD14BY2E563J	Carbon	56kΩ	±5%	1/4W	
Re15, 16	PD14BY2E222J	Carbon	2.2kΩ	±5%	1/4W	
Re17, 18	PD14BY2E472J	Carbon	4.7kΩ	±5%	1/4W	
Re19, 20	PD14CY2E101J	Carbon	100Ω	±5%	1/4W	
Re21~24	RC05GF2H331K	Carbon	330Ω	±10%	1/2W	
Re25~28	RN14AB3DR47J	Metal film	0.47Ω	±5%	2W	
Re29~32	RC05GF2H100K	Carbon	10Ω	±10%	1/2W	
Re35, 36	PD14BY2E472J	Carbon	4.7kΩ	±5%	1/4W	
Re37, 38	PD14BY2E102J	Carbon	1kΩ	±5%	1/4W	
Re39, 40	PD14BY2E152J	Carbon	1.5kΩ	±5%	1/4W	
Re41, 42	PD14CY2E561J	Carbon	560Ω	±5%	1/4W	
Re43	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W	
Re44	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
Re46	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
Re47	PD14CY2E332J	Carbon	3.3kΩ	±5%	1/4W	
Re49	PD14CY2E333J	Carbon	33kΩ	±5%	1/4W	
Re50	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
Re51, 52	RC05GF2H392K	Carbon	3.9kΩ	±10%	1/2W	
Re53	PD14CY2E183J	Carbon	18kΩ	±5%	1/4W	
Re54	PD14BY2E183J	Carbon	18kΩ	±5%	1/4W	
Re55	PD14BY2E101J	Carbon	100Ω	±5%	1/4W	
Re56	RC05GF2H681K	Carbon	680Ω	±10%	1/2W	
Re57	PD14BY2E560J	Carbon	56Ω	±5%	1/4W	
Re58	RC05GF2H152K	Carbon	1.5kΩ	±10%	1/2W	
Re59	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W	
		SEMICONDUCTOR				
Qe1~4		2SC1345 (E)				
Qe5, 6		2SA621-2-3 or 4				
Qe7, 8		2SA743A (B) or (C)				
Qe9, 10		2SC1212A (B) or (C)				
Qe11, 12		2SA626				
Qe13, 14		2SD180				
Qe15~17		2SC1213A (B)				
Qe18		2SA673A (B)				
Qe19, 20		2SC1213A (B) or (C)				

MAIN AMP (X07-1030-03) PARTS LIST

Ref. No.	Parts No.	Description	Remarks
De1, 2 De3, 4 De5~10 De11 De12~15 De16 THe1, 2		1S1555 STV-3 1S1555 RV-1 V03C 1S338T 5T-31L	
POTENTIOMETER			
VRe1, 2	R12-0026-05	PC trimmer 500Ω (B) (BIAS)	
MISCELLANEOUS			
–	E02-0209-05	Transistor socket x 4	
–	F01-0135-03	Heat sink	
–	J19-0101-04	Varistor holder x 2	

PREAMP (X08-1130-00) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
CAPACITOR						
Cd1, 2	CS04E1E010M	Tantalum	1μF	25WV		
Cd3, 4	CK45D1H561M	Ceramic	560pF	±20%		
Cd5, 6	CC45SL1H330K	Ceramic	33pF	±10%		
Cd7, 8	CE04W1E100MBR	Electrolytic	10μF	25WV		
Cd9, 10	CE04W1E100	Electrolytic	10μF	25WV		
Cd11, 12	CC45SL1H330K	Ceramic	33pF	±10%		
Cd13, 14	CQ93M1H153J	Mylar	0.015μF	±5%		
Cd15, 16	CQ93M1H472J	Mylar	0.0047μF	±5%		
Cd17, 18	CC45SL1H680K	Ceramic	68pF	±10%		
Cd19, 20	CE04W0F101	Electrolytic	100μF	3.15WV		
Cd21, 22	CE04W1E100MBR	Electrolytic	10μF	25WV		
Cd23, 24	CS04E1ER47M	Tantalum	0.47μF	25WV		
Cd25, 26	CE04W1E100	Electrolytic	10μF	25WV		
Cd27, 28	CE04W1E100MBR	Electrolytic	10μF	25WV		
Cd29	CE04W1V101	Electrolytic	100μF	35WV		
Cd30	CE04W1H010	Electrolytic	1μF	50WV		
Cd31	CC45SL1H101K	Ceramic	100pF	±10%		
Cd32	CK45D1H561M	Ceramic	560pF	±20%		
Cd33	CE04W1H010	Electrolytic	1μF	50WV		
Cd34	CE04W1E100	Electrolytic	10μF	25WV		
Cd35	CE04W1H010	Electrolytic	1μF	50WV		
Cd36	CE04W1E100	Electrolytic	10μF	25WV		
RESISTOR						
Rd1, 2	PD14BY2E222J	Carbon	2.2kΩ	±5%	1/4W	
Rd3, 4	PD14BY2E823J	Carbon	82kΩ	±5%	1/4W	
Rd5, 6	RN92J2H684J	Metal film	680kΩ	±5%	1/2W	
Rd7, 8	RN92J2H334J	Metal film	330kΩ	±5%	1/2W	
Rd9, 10	PD14BY2E473J	Carbon	47kΩ	±5%	1/4W	
Rd11, 12	PD14BY2E471J	Carbon	470Ω	±5%	1/4W	
Rd13, 14	PD14BY2E472J	Carbon	4.7kΩ	±5%	1/4W	
Rd15, 16	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
Rd17, 18	PD14BY2E274J	Carbon	270kΩ	±5%	1/4W	
Rd19, 20	PD14BY2E163J	Carbon	16kΩ	±5%	1/4W	
Rd21, 22	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
Rd23, 24	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
Rd25, 26	PD14BY2E221J	Carbon	220Ω	±5%	1/4W	
Rd27, 28	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
Rd29, 30	PD14BY2E563J	Carbon	56kΩ	±5%	1/4W	
Rd31, 32	PD14BY2E333J	Carbon	33kΩ	±5%	1/4W	
Rd33, 34	PD14BY2E273J	Carbon	27kΩ	±5%	1/4W	
Rd35, 36	PD14BY2E684J	Carbon	680kΩ	±5%	1/4W	
Rd37, 38	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
Rd39, 40	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
Rd41, 42	PD14BY2E122J	Carbon	1.2kΩ	±5%	1/4W	
Rd43, 44	PD14BY2E563J	Carbon	56kΩ	±5%	1/4W	
Rd45, 46	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
Rd47	PD14BY2E102J	Carbon	1kΩ	±5%	1/4W	
Rd48	PD14BY2E333J	Carbon	33kΩ	±5%	1/4W	
Rd49	PD14BY2E222J	Carbon	2.2kΩ	±5%	1/4W	
Rd50	PD14BY2E824J	Carbon	820kΩ	±5%	1/4W	
Rd51	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
Rd52	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
Rd53	PD14BY2E102J	Carbon	1kΩ	±5%	1/4W	
Rd54	PD14BY2E820J	Carbon	82Ω	±5%	1/4W	

PREAMP (X08-1130-00) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
Rd55	PD14BY2E222J	Carbon	2.2kΩ	±5%	1/4W	
Rd56	PD14BY2E224J	Carbon	220kΩ	±5%	1/4W	
Rd57	PD14BY2E274J	Carbon	270kΩ	±5%	1/4W	
Rd58	PD14BY2E332J	Carbon	3.3kΩ	±5%	1/4W	
Rd59	PD14BY2E273J	Carbon	27kΩ	±5%	1/4W	
		SEMICONDUCTOR				
Qd1, 2		2SA620WL4				
Qd3, 4		2SC1345 (D)				
Qd5, 6		2SC1345 (D) or (E)				
Qd7		2SC1345 (E)				
Qd8		2SC1345 (D) or (E)				
		MISCELLANEOUS				
–	J21-1003-14	Mounting hardware				
–	J21-1004-14	Mounting hardware				

TONE AMP (X11-1100-10) PARTS LIST

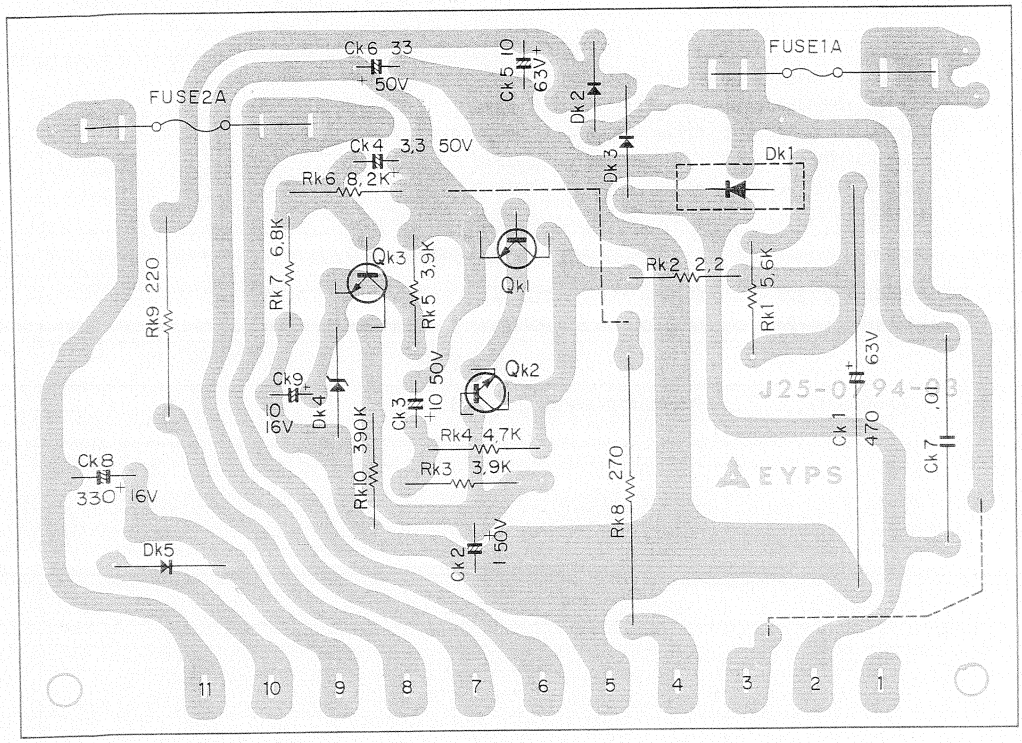
Ref. No.	Parts No.	Description			Remarks
		CAPACITOR			
Ci1, 2	CS04E1E010XorM	Tantalum	1μF	25WV	
Ci3, 4	CC45SL1H101K	Ceramic	100pF	±10%	
Ci5, 6	CE04W1E100	Electrolytic	10μF	25WV	
Ci7, 8	CE04W0J101	Electrolytic	100μF	6.3WV	
Ci9, 10	CQ93M1H103K	Mylar	0.01μF	±10%	
Ci11, 12	CQ93M1H104K	Mylar	0.1μF	±10%	
Ci13, 14	CQ93M1H222K	Mylar	0.0022μF	±10%	
Ci15, 16	CQ93M1H273K	Mylar	0.027μF	±10%	
Ci17	CE04W1V101	Electrolytic	100μF	35WV	
Ci18, 19	CK45D1H102M	Ceramic	0.001μF	±20%	
		RESISTOR			
Ri1~4	PD14BY2E103J	Carbon	10kΩ	±5% 1/4W	
Ri5, 6	PD14BY2E564J	Carbon	560kΩ	±5% 1/4W	
Ri7, 8	PD14BY2E124J	Carbon	120kΩ	±5% 1/4W	
Ri9, 10	PD14BY2E562J	Carbon	5.6kΩ	±5% 1/4W	
Ri11, 12	PD14BY2E102J	Carbon	1kΩ	±5% 1/4W	
Ri13, 14	PD14BY2E271J	Carbon	270Ω	±5% 1/4W	
Ri15, 16	PD14BY2E562J	Carbon	5.6kΩ	±5% 1/4W	
Ri17, 18	PD14BY2E152J	Carbon	1.5kΩ	±5% 1/4W	
Ri19, 20	PD14BY2E103J	Carbon	10kΩ	±5% 1/4W	
Ri21, 22	PD14BY2E681J	Carbon	680Ω	±5% 1/4W	
Ri23	PD14BY2E561J	Carbon	560Ω	±5% 1/4W	
		SEMICONDUCTOR			
Qi1, 2		2SC1000BL			
		POTENTIOMETER			
VRi1	R08-4059-05	Potentiometer	50kΩ (B) dual	VOLUME	
VRi2	R03-5020-05		100kΩ (W)	BALANCE	
VRi3	R08-4051-05	Potentiometer	50kΩ (A) dual	BASS	
VRi4	R08-4051-05	Potentiometer	50kΩ (A) dual	TREBLE	

PUSHBUTTON (X13-1270-10) PARTS LIST

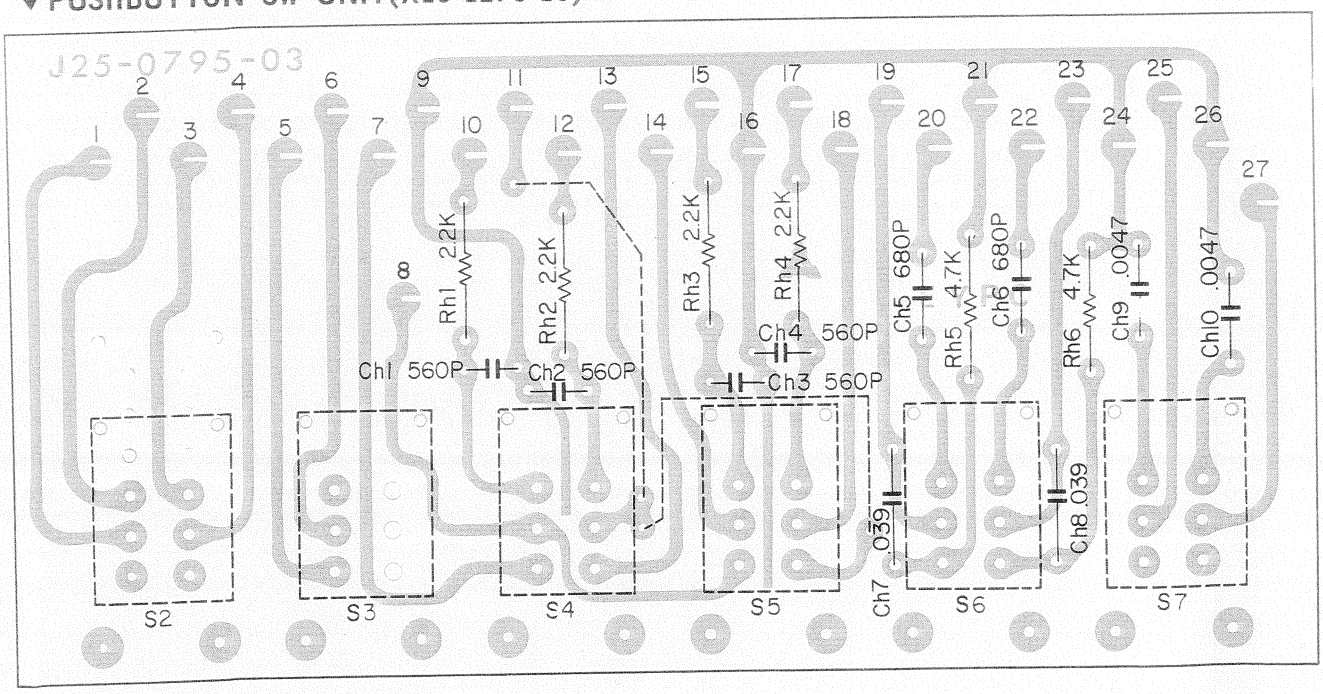
Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Ch1~4	CK45D1H561M	Ceramic	560pF	±20%		
Ch5	CK45D1H681M	Ceramic	680pF	±20%		
Ch6	CQ93M1H393K	Mylar	0.039μF	±10%		
Ch7	CK45D1H681M	Ceramic	680pF	±20%		
Ch8	CQ93M1H393K	Mylar	0.039μF	±10%		
Ch9, 10	CQ93M1H472K	Mylar	0.0047μF	±10%		
		RESISTOR				
Rh1~4	PD14BY2E222J	Carbon	2.2kΩ	±5%	1/4W	
Rh5, 6	PD14BY2E472J	Carbon	4.7kΩ	±5%	1/4W	
		SWITCH				
S2~7	S40-6008-05	Pushbutton switch (6 keys)				

PC BOARD

▼POWER SUPPLY(X00-1200-61)

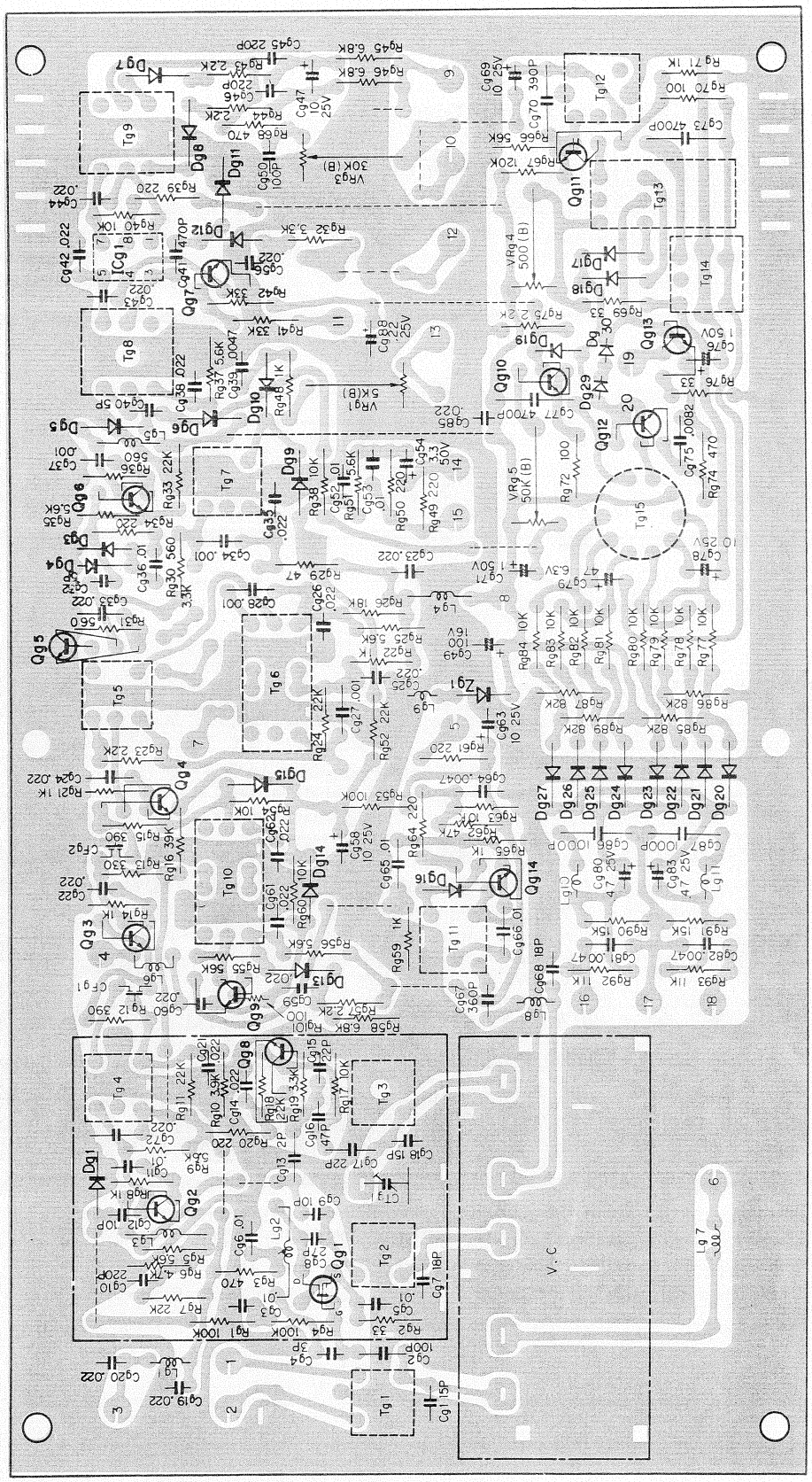


▼PUSHBUTTON SW UNIT(X13-1270-10)



PC BOARD

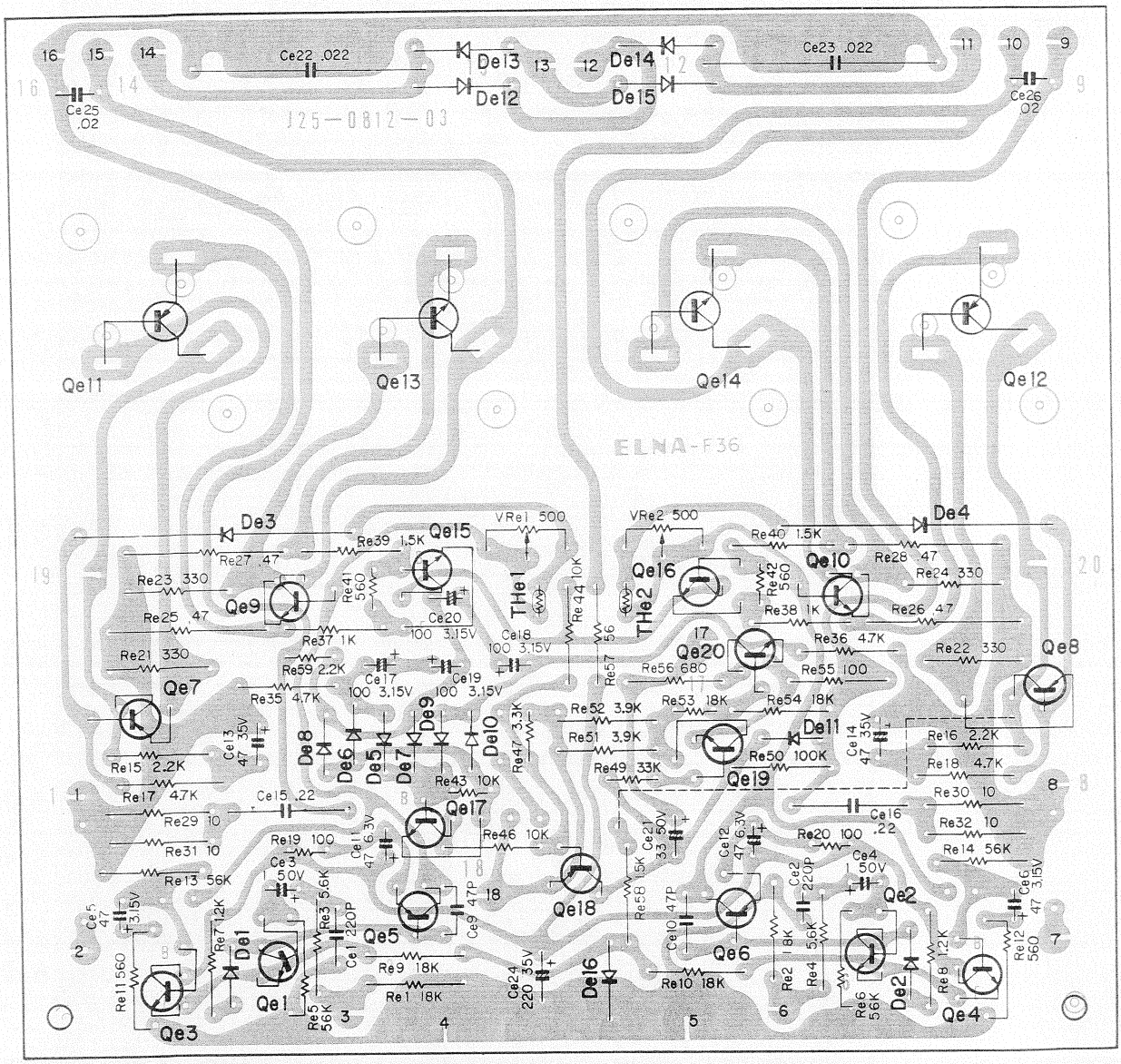
TUNER UNIT ▶
(X05-1080-61)



Qg1 : 3SK30 (B) or (C),
Qg2~4 : 2SC381 (R),
Qg5, 6 : 2SC535 (B),
Qg7 : 2SC945 (Q) or (R),
Qg8 : 2SC785 (R),
Qg9 : 2SC941 (O),
Qg10 : 2SA733 (Q) or (R),
Qg11, 12 : 2SC458 (D),
Qg13 : 2SC1213A (C),
Qg14 : 2SC941 (O),
ICg1 : μPC555A,
Dg1 : 1N60,
Dg3, 4 : 1S1555 or 1S2076,
Dg5~12 : 1N60,
Dg13 : 1S1555 or 1S2076,
Dg14~18 : 1N60,
Dg19 : 1S1555 or 1S2076,
Dg20~27 : 1N60,
Dg29, 30 : MV-13

PC BOARD

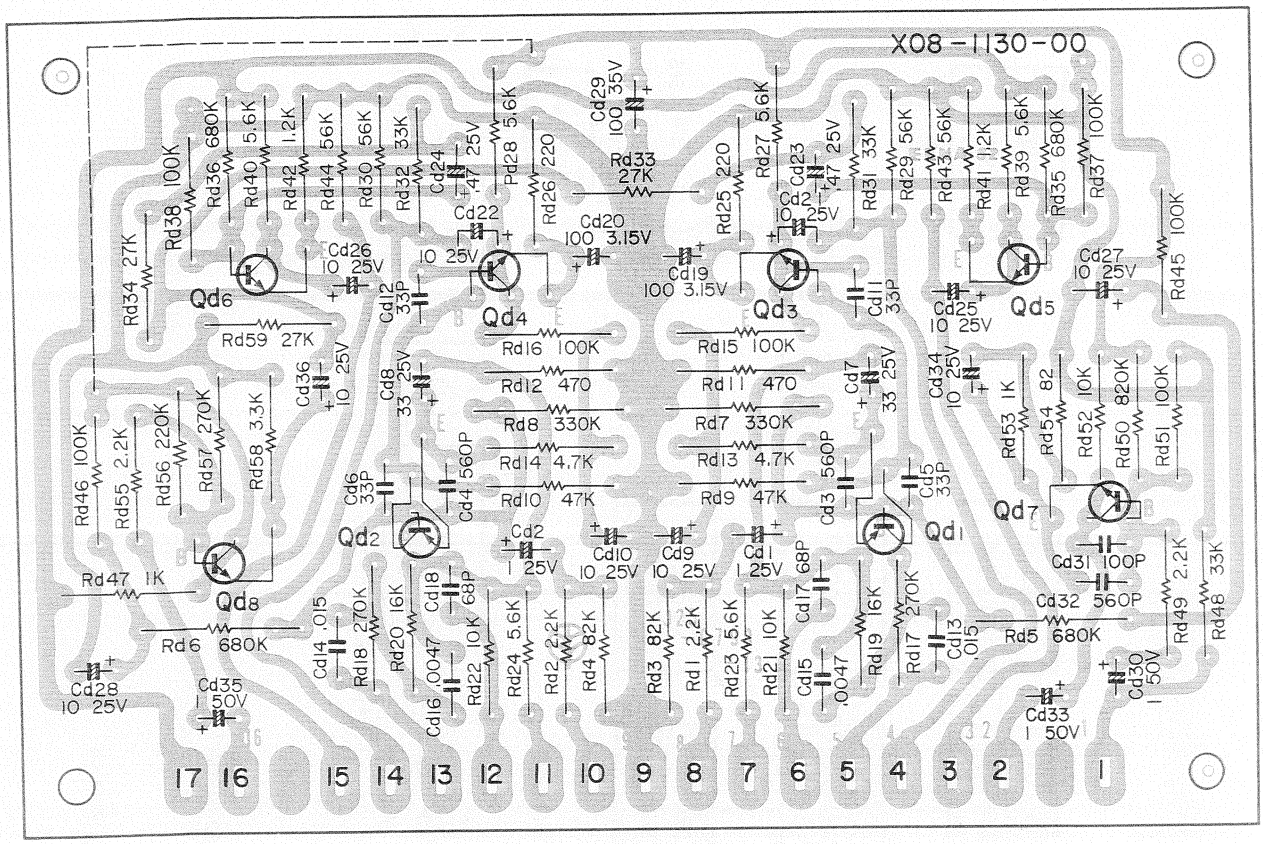
▼MAIN AMP UNIT (X07-1030-03)



Qe1~4 : 2SC1345 (E),
Qe5, 6 : 2SA621-2-3 or 4,
Qe7, 8 : 2SA743A (B) or (C)
Qe9, 10 : 2SC1212A (B) or (C),
Qe11, 12 : 2SA626,
Qe13, 14 : 2SD180
Qe15~17 : 2SC1213A (B),
Qe18 : 2SA673A (B),
De1, 2 : 1S1555.
De3, 4 : STV-3,
De5~10 : 1S1555,
De11 : RV-1,
De12~15 : V0-3C
De16 : 1S338T,
THe1, 2 : 5T-31L

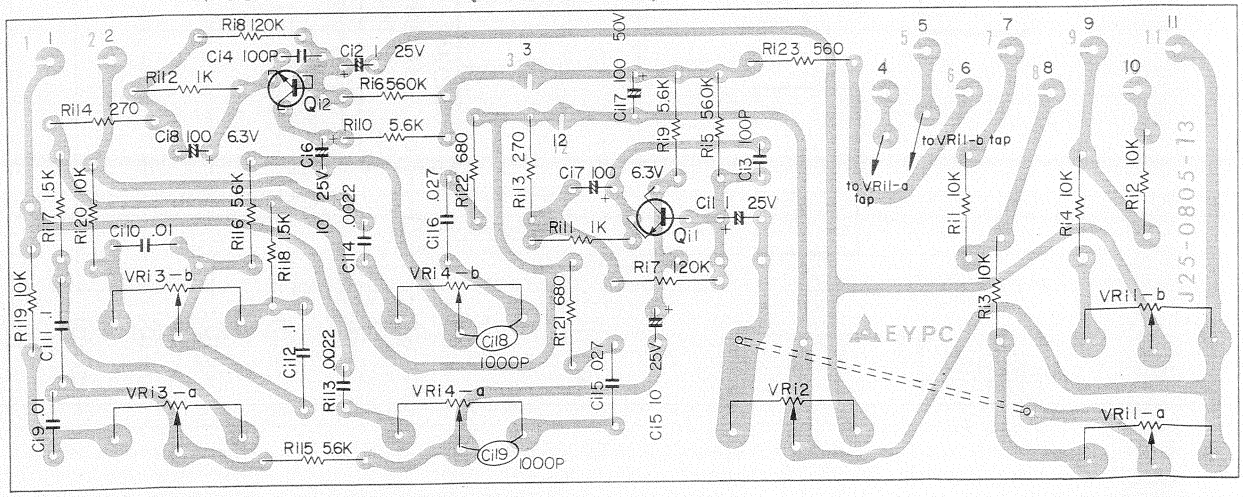
PC BOARD

▼PREAMP UNIT (X08-1130-00)



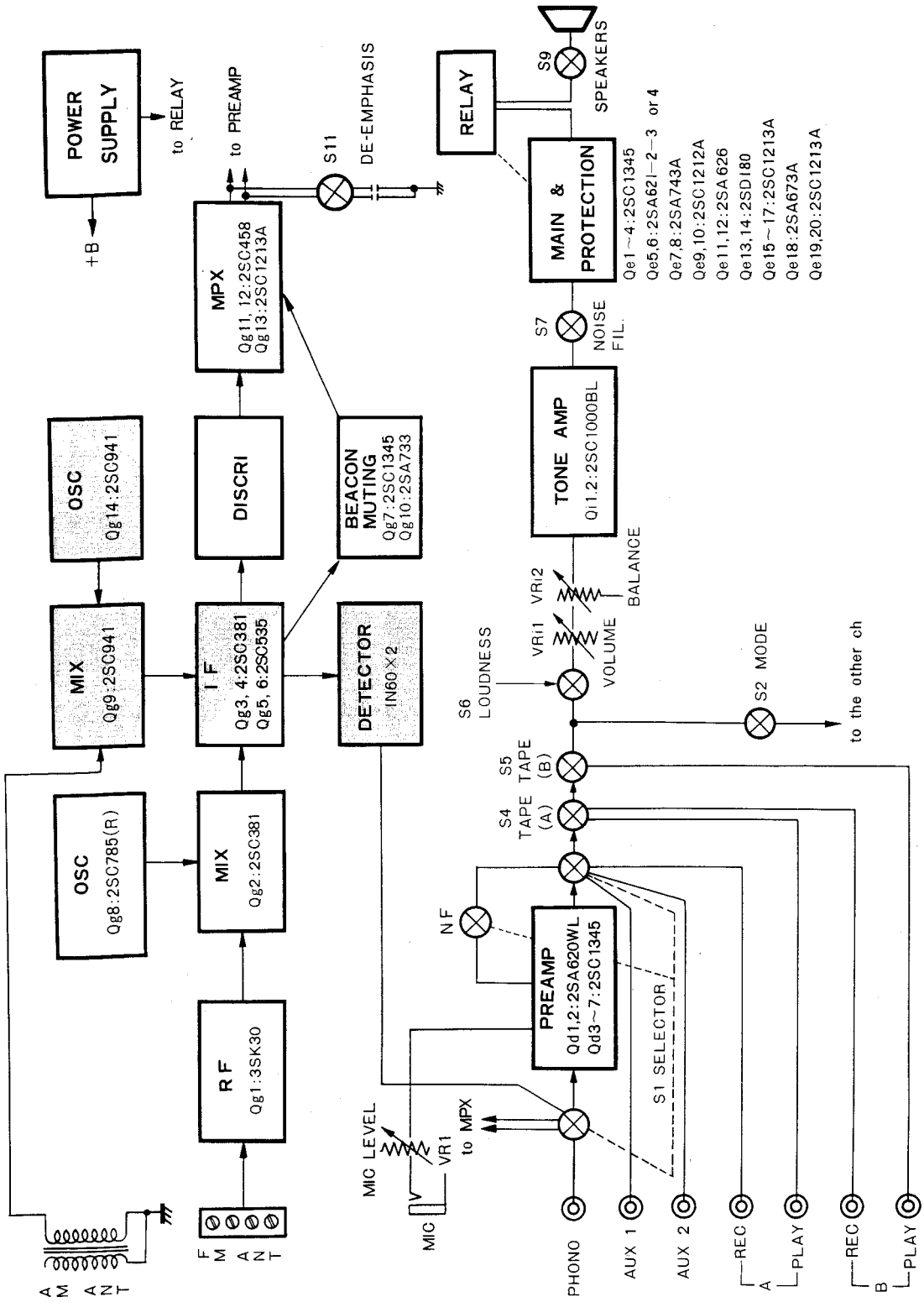
Qd1, 2 : 2SA620WL4, Qd3, 4 : 2SC1345D, Qd5, 6, 8 : 2SC1345D or E, Qd7 : 2SC1345E

▼TONE AMP UNIT (X11-1100-10)



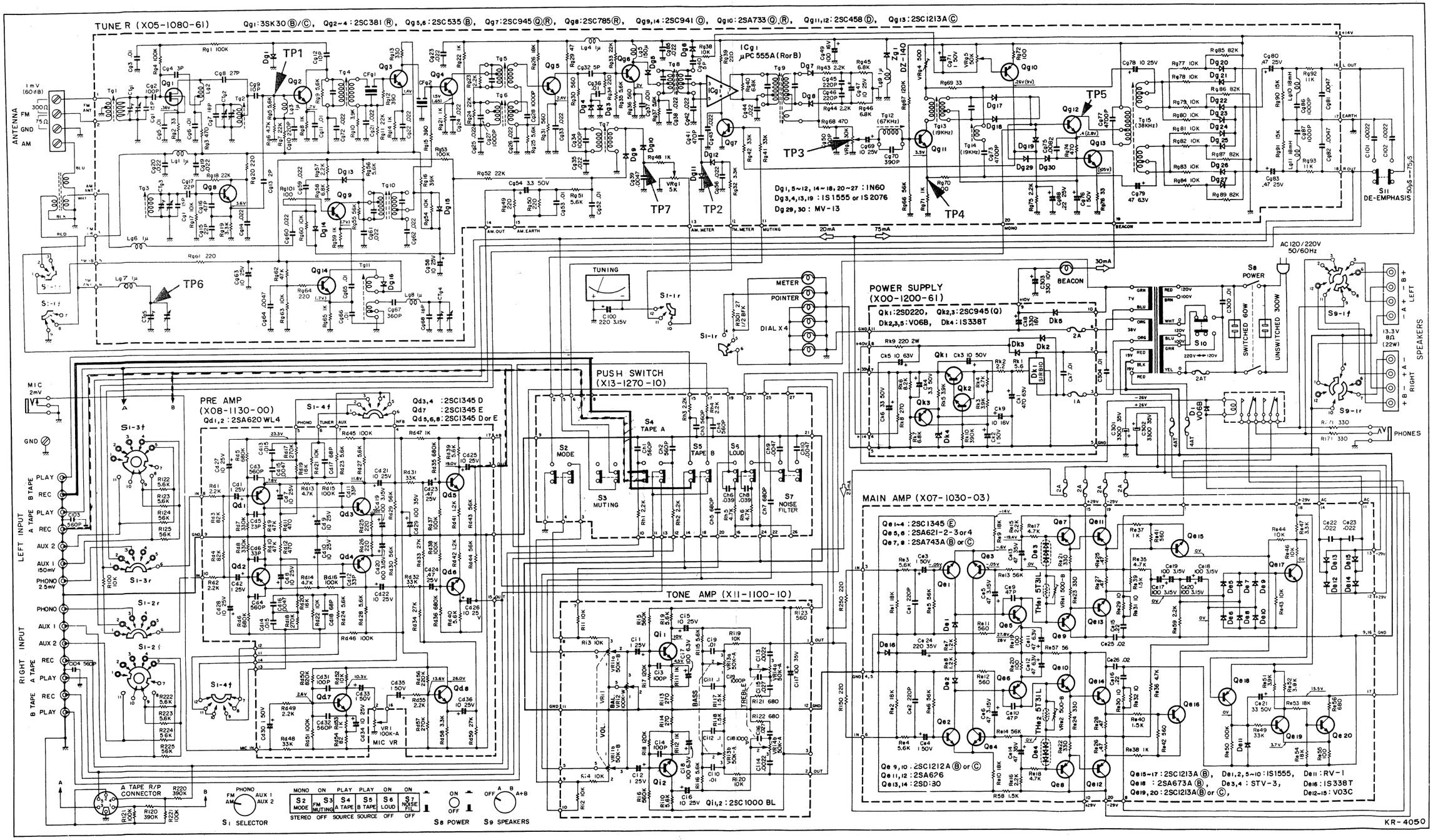
Qi1, 2 : 2SC1000BL

BLOCK DIAGRAM



V Rg4 = MPX- übersprechen

SCHEMATIC DIAGRAM



SPECIFICATIONS

FM TUNER SECTION

Usable Sensitivity (IHF)	2.0 μV
Quieting Slope	5 μV 48 dB, 10 μV 60 dB, 50μV 63 dB
Frequency Response	20 Hz ~ 15,000 Hz +0.5 dB −2.0 dB
Harmonic Distortion	0.5% Mono (at 400 Hz 100% modulation) 0.8% Stereo (at 400 Hz 100% modulation)
Signal to Noise Ratio	63 dB at 1mV input
Image Rejection	60 dB
Selectivity (IHF ALT channel)	50 dB
IF Rejection	90 dB
Spurious Signal Rejection	90 dB
AM Suppression	60 dB
Capture Ratio	3.0 dB
Stereo Separation	40 dB at 1,000 Hz 20 dB at 10,000 Hz
Sub Carrier Suppression	45 dB
Antenna Impedance	300 ohms Balanced & 75 ohms Unbalanced

AM TUNER SECTION

Usable Sensitivity (IHF)	25 μV
Signal to Noise Ratio	45 dB at 1 mV input
Image Rejection	45 dB
Selectivity (IHF)	30 dB
IF Rejection	35 dB
Antenna	Built-in ferrite antenna, External antenna terminals

MAIN-AMPLIFIER SECTION

RMS Power Output	
Both channels driven	20/20 watts into 8 ohms at 50 Hz ~ 20,000 Hz
	22/22 watts into 8 ohms at 1,000 Hz
	26/26 watts into 4 ohms at 1,000 Hz
Each channel driven	26/26 watts into 8 ohms at 1,000 Hz
	32/32 watts into 4 ohms at 1,000 Hz
Dynamic Power Output	62 watts into 8 ohms 82 watts into 4 ohms
Total Harmonic Distortion	0.7% at rated power into 8 ohms 0.2% at 1/2 rated power into 8 ohms at 1,000 Hz
Intermodulation Distortion (60 Hz: 7 kHz = 4 : 1)	0.7% at rated power into 8 ohms 0.2% at 1/2 rated power into 8 ohms
Power Bandwidth	25 Hz ~ 30,000 Hz
Damping Factor	50 at 8 ohms
Speaker Impedance	Accept 4 ohms to 16 ohms

PRE-AMPLIFIER SECTION

Input Sensitivity and Impedance	
Phono	3 mV, 50 Kohms
Aux 1 & 2	150 mV, 50 Kohms
Tape Play A & B	200 mV, 50 Kohms
Mic	1.5 mV, 50 Kohms
Signal to Noise Ratio	
Phono	60 dB
Aux 1 & 2	64 dB
Tape Play A & B	70 dB
Mic	50 dB
Output Voltage	
Tape Rec. A & B (Pin)	150 mV
(Din connector)	30 mV
Frequency Response	
Aux, Tape Play	22 Hz ~ 35,000 Hz ±2 dB
Tone Controls	
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10,000 Hz
Loudness Control (−30 dB)	+10 dB at 100 Hz + 5 dB at 10,000 Hz
Noise Filter	−10 dB at 10,000 Hz

GENERAL

Switches	
Speaker Selector	OFF, A, B, A + B
Input Selector	AM, FM, Phono, Aux1, Aux 2
Mode	Mono, Stereo
Tape Monitor	A, B
Others	Noise filter, FM muting, Loudness
AC Outlet	Switched 1, Unswitched 2
Power Consumption	137 watts at full power 40 watts at no signal
Dimensions	W 17-3/4" (451mm), H 5-5/8" (143mm), D 13-3/16" (335mm)
Weights	22.4 lbs. (10.2 kg)

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